Back from bankruptcy Metro Ethernet provider Yipes is the latest carrier to get a second chance. PAGE 8.

Portal power Portals are helping companies make money — just ask Halliburton's Brandon Lackey. PAGE 19.

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

July 15, 2002 ■ Volume 19, Number 28

Standard may bring order to e-mail chaos

■ BY CAROLYN DUFFY MARSAN

Relief may be in sight for corporate users who are struggling to manage overflowing e-mail inboxes. A promising filtering technology called Sieve is gathering support among messaging software vendors, including Sun, Rockliffe, Critical Path and Sendmail.

Developed by the Internet Engineering Task Force, Sieve offers a simple, universal way for users to create filters for sorting, deleting and forwarding e-mail messages before they enter an in-box.

"Our corporate customers want the capability of an intelligent in-box," says Jeff Morris, a product line manager at Sendmail, which plans to offer Sieve filtering this fall. "They want the system to

See Sieve, page 14

Accent on access control

Conference to highlight SAML, an emerging standard for identity management.

■ BY JOHN FONTANA

SAN FRANCISCO — Industry heavyweights this week will throw their support behind a developing standard that promises to help network executives build centrally managed, easily sharable user identity systems.

At the annual Burton Group Catalyst Conference, a parade of vendors, including RSA Security, Netegrity, Oblix and Novell, will announce support for Security Assertion Markup Language (SAML), an emerging XML-based standard for exchanging authentication and authorization information. Also at the conference, those vendors will join Baltimore Technologies, Crosslogix, Sun, IBM's Tivoli Systems and others in a SAML interoperability demonstration.

The biggest shot in the arm, however, will come from the Liberty Alliance, a group of vendors and corporate users who have spent the past six months creating a single sign-on specification. The group will release its work, and announce it is supporting SAML and adding nearly 20 new members.

"Having one place to control

See Security, page 10

Pondering identity management

Pros:

- Reduces user management costs.
- Provides secure single sign-on combined with authorization.
- Creates scalable security infrastructure.
- Supports personalization services.

Cons:

- Standards in development stage.
- Vulnerable to familiar Web-based computing security issues such as spoofing, DoS attacks.
- Companies left to integrate products.

IT pros share painful lessons

■ BY ELLEN MESSMER

NEW YORK — The age of terrorism ushered in over the past year has forced companies to rethink how to cope with emerging threats, including potentially more destructive cyberattacks. It also has encouraged IT security professionals to be more candid about their experiences.

Looking to share his lessons learned, Deloitte & Touche Director Steven Ross last week spoke about the company's experiences on Sept. 11 at the Information Systems Audit and Control Association (ISACA) conference in New York.

Deloitte & Touche found out about the shortcomings of its business-recovery plan when the company evacuated its New York office after the planes slammed into the World Trade Center towers across the street. Ross, an IT security specialist, authored the company's back-up and recovery plan.

"You can have all the back-up sites in the world, but if people can't get to them, it doesn't do any

See Recovery, page 12

www.nwfusion.com **More!**

See how Vircom is taking an open source approach to filtering spam.

DocFinder: 1242

Windows .Net Server

Get ready: Microsoft is preparing to ship a new server operating system that promises improved reliability and support for Web services.

Page 35

"There is no reason
for any individual
to have a computer
in their home."

1977

"640K ought
to be enough
for anybody."

1984

"Portal,
schmortal."

2002

(Pooh-pooh it now, while you still can.)

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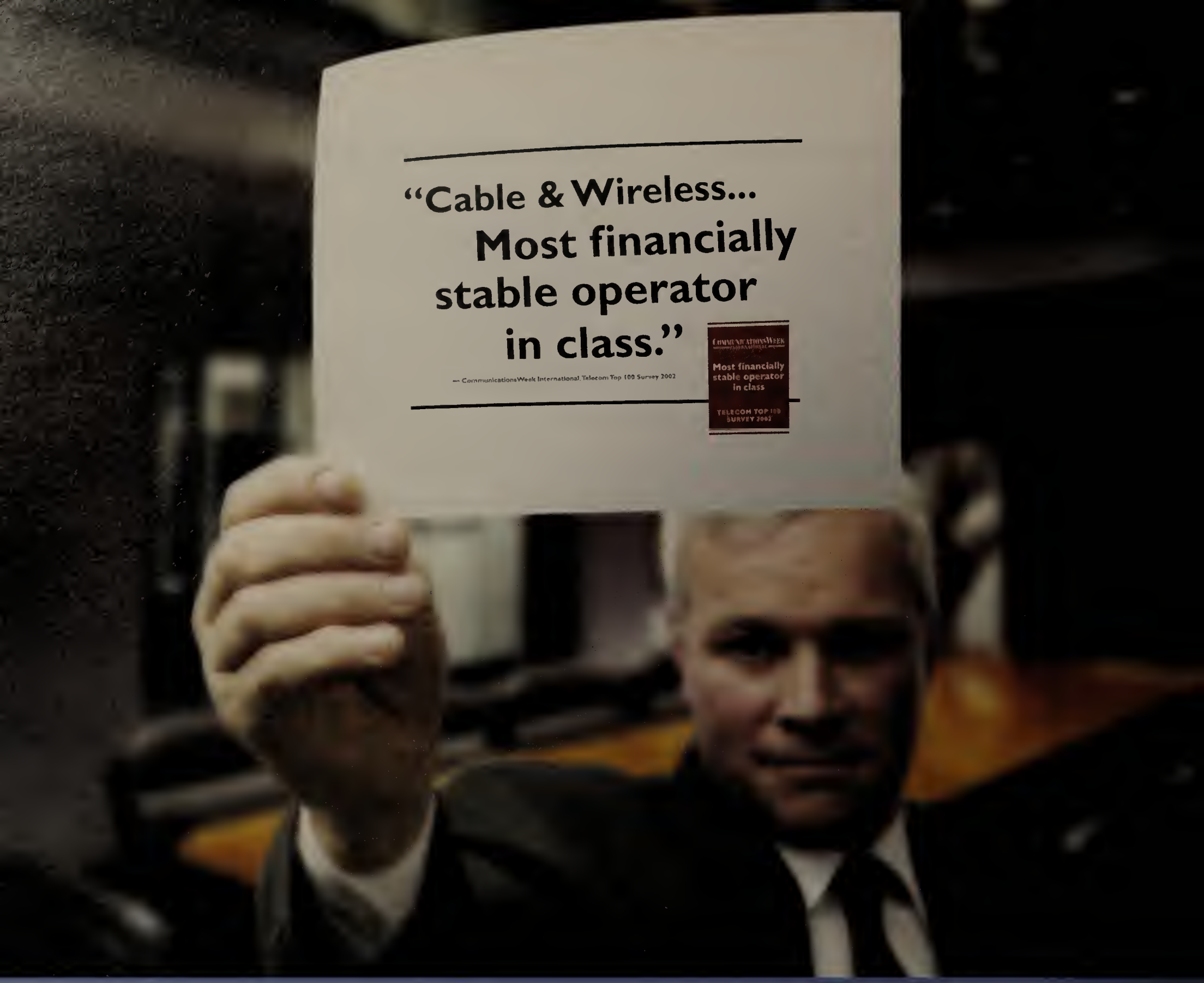

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7/15/02

NetworkWorld

News

Infrastructure

Enterprise Applications

Service Providers

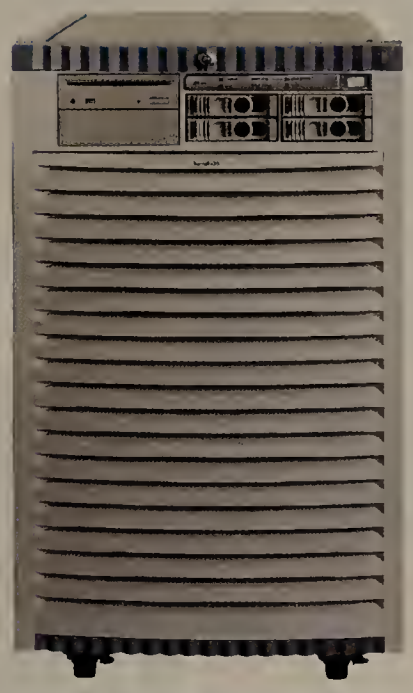
The Edge

Technology Update

Opinions

Management Strategies

Kensington's PocketHub provides four additional USB ports. See more in Cool Tools, page 30.



Our testers found the HP RP8400 was worth the money despite its high cost.

Features

Windows .Net Server: If you're still grappling with a Windows 2000 upgrade, get ready — Microsoft is preparing to ship its new server operating system later this year. **Page 35.**

Review: HP's RP8400 server: 16 processors make this a powerful addition to your data center. **Page 37.**

Review: Stampede TurboGold: Improves Lotus Notes replication. **Page 39.**

Tester's Choice: Henderson's wireless network in his house in suburban Indianapolis is hit by drive-by hackers. Is anyone safe? **Page 40.**

NetworkWorldFusion

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Interactive

Forum: Reluctantly leaving NetWare

One network professional is facing some tough decisions now that his bosses have decided to migrate from NetWare to Windows. What would your advice be to him?

DocFinder: 1232

Forum: What do you want from Sun?

We asked your peers, now it's your turn to be heard. What can the company do better? Where should it start?

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Call for entries: User Excellence Award

Take a shot at winning our 18th annual User Excellence Award competition for your latest and greatest network project. Fill out our online nomination form.

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Seminars and Events

VoIP training comes to you!

Looking for a cost-effective way to train your team? Trying to widen your department's skill set on a shrinking budget? With equipment provided by Avaya, NetSmart's on-site voice-over-IP training is the perfect way to educate your staff without leaving the office.

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Columnists

Compendium

Dublin Core meltdown

Fusion Executive Editor Adam Gaffin introduces you to the Dublin Core, which seeks to standardize the structure of meta data about online documents.

DocFinder: 1235

Help Desk

Intranet access and VPNs

Columnist Ron Nutter helps a user who can't get his router to let him access an intranet over a VPN.

DocFinder: 1236

Home Base

Governor's support boosts telework

Columnist Jeff Zbar details the success of a Phoenix-area telework program.

DocFinder: 1237

View from The Edge

A force to be reckoned with?

Senior Writer Phil Hochmuth asks, are you looking for a 10G Ethernet switch? You might want to check in with newcomer Force10 Networks, if you can find it.

DocFinder: 1238

■ **CONTACT US** Network World, 118 Turnpike Road, Southborough, MA 01772; **Phone:** (508) 460-3333; **Fax:** (508) 490-6438; **E-mail:** nwnews@nww.com; **STAFF:** See the masthead on page 12 for more contact information. **REPRINTS:** (717) 399-1900

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We've made it easy to access articles and resources online. Simply enter the four-digit DocFinder number in the search box on the home page, and you'll jump directly to the requested information.

News Bits

holes could let an attacker take over a server. Also, eEye Digital Security discovered a flaw related to Network Associates' PGP encryption plug-in for Microsoft's Outlook e-mail client. The PGP "heap overflow" vulnerability lets an attacker send an e-mail to any Outlook address enabled with the PGP plug-in to gain access to the victim's e-mail.

Microsoft finalizes Navision purchase

■ Microsoft last week completed its acquisition of Danish software company Navision in a stock deal valued at $1.45 billion. Microsoft will now merge the Denmark company into its Business Solutions division. In May, Microsoft announced its intention to buy Navision, which develops business-planning software for small and midsize companies. Navision's English rival The Sage Group opposed the deal. Sage asked the Danish competition authority to request a European Commission investigation into potential anticompetitive behavior by Microsoft and Navision, highlighting the possibility that Microsoft could flush smaller companies out of the market by bundling Navision's accounting applications with its software and flooding the market at a low price. Last month, the Danish watchdog announced it would not ask the European Commission to investigate, in effect giving the green light to a deal between Microsoft and Navision.

Tauzin: Ebbers knew of deceptions

■ Former CEO Bernard Ebbers knew that WorldCom was engaged in the deceptive accounting practices that led to numerous investigations and the verge of bankruptcy, U.S. Rep. Billy Tauzin (R-La.) said last week. Former WorldCom CFO Scott Sullivan told lawyers conducting the company's internal investigation into the accounting scandal that Ebbers knew of the accounting irregularities. The lawyers then informed the House's Energy and Commerce committee, which Tauzin chairs.

When asked if the revelation, and those about accounting scandals at Enron and other firms, meant some corporate officers could face jail time, Tauzin responded, "Oh, absolutely. And actually, I think the sooner some major corporate criminal goes to prison, the faster investor confidence is going to rebuild in this country."

Sun says Web services group snubbed it

■ Sun, absent from the Web Services Interoperability Organization formed earlier this year by nine companies including IBM and Microsoft, is interested in joining but only on equal terms with the founders. "We want to be part of WS-I, but we have not been invited properly yet," says John Bobowicz, a Sun technical strategist. Sun didn't have a chance to join the companies in founding WS-I because it was only notified of the plan on the evening before the announcement. "We couldn't even consider it," he said. "They announced to the world that they will allow two more board members, but then they announce that the board members they are going to add can only have term limits of two years. IBM and Microsoft won't have term limits, so quite frankly I don't think we are interested in those kinds of games."

Bugs bite Microsoft, Network Associates

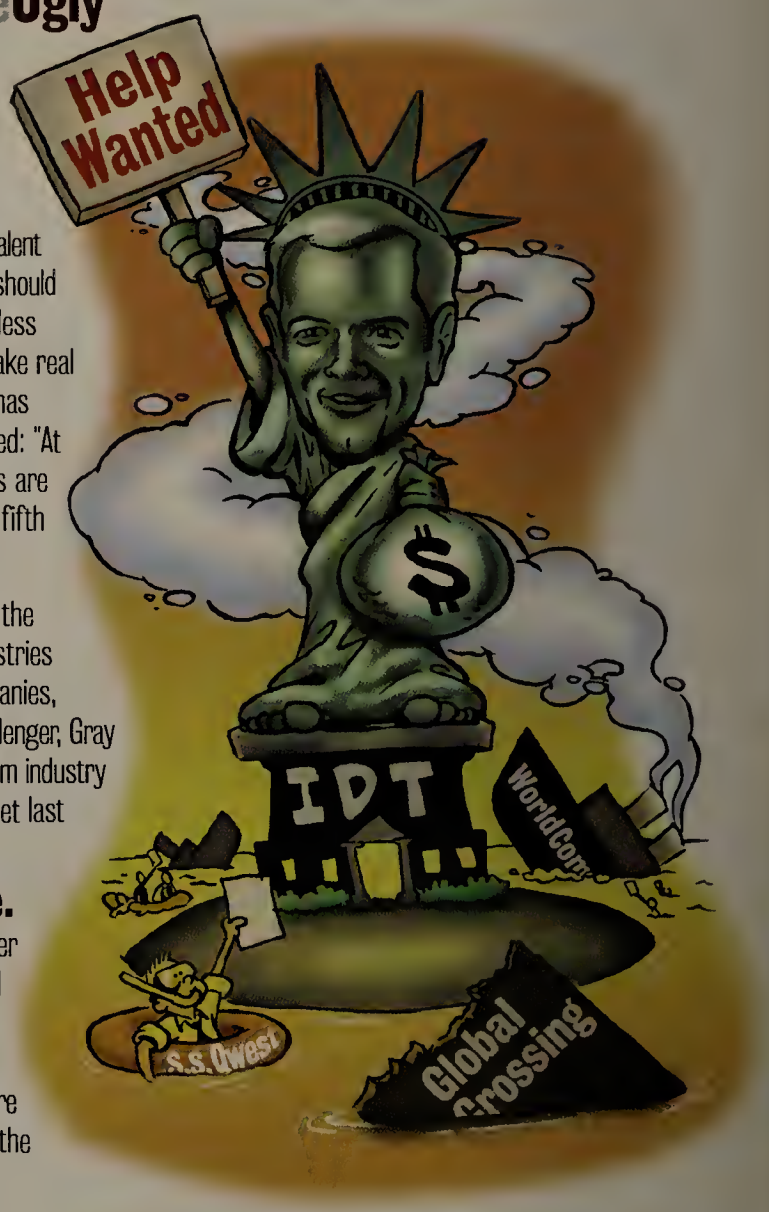
■ Microsoft and Network Associates last week each had security bugs associated with their products that required users to download patch fixes. There were three security holes in Microsoft's SQL Server, affecting SQL Server 2000 and Microsoft Data Engine 2000. The

■ TheGoodTheBadTheUgly

Land of opportunity. Howard Jonas, chairman of IDT Corp., says not every carrier is melting down. "IDT almost has become the telecom equivalent of New York's Liberty Island. Our motto should be 'Give us your hungry and near homeless telecom sales executives yearning to make real money again.'" Jonas, whose company has proposed buying part of WorldCom, added: "At a time when many at telecom companies are 'taking the fifth,' we at IDT are adding a fifth to our staff." ➤

Deep cuts. One in every four of the 735,527 job cuts announced by all industries through June came from telecom companies, according to outplacement company Challenger, Gray & Christmas. Not surprisingly, the telecom industry is on pace to break its job-cut record set last year.

May they rest in peace. Within the past few weeks service provider equipment makers Gotham Networks and Pluris Networks, which raised more than $230 million in venture funding between them, joined the start-up graveyard. They're sure to get more company soon, given the worsening condition of many carriers.



COMPENDIUM

Cable users helping terrorists

If you open your Wi-Fi, the terrorists have won. Last week, one cable exec dragged patriotrism into the company's war on subscribers who open their connections to Wi-Fi users: "If you have a Wi-Fi connection in a public park, what would stop, God forbid, a child pornographer or, God forbid, a terrorist using that network?" What do you think?

You'll get plenty of stuff you have to see every day, even Monday, in Compendium. www.nwfusion.com, DocFinder: 1243.

ACLU calls for tighter cable regulation

■ The openness of the Internet is in danger of being compromised by cable companies that offer high-speed broadband services, says the American Civil Liberties Union, and the U.S. government must act to protect freedom of communication. As Americans move from dial-up Internet access to cable broadband, they're also moving from the open, regulated telephone network to proprietary cable networks controlled by a few large companies, the ACLU says. "Many people don't realize that if current policies continue, a handful of big monopolies will gain power over information flowing through the Internet," says Barry Steinhardt of the ACLU. "Freedom of speech doesn't mean much if the forums where that speech takes place are not free." The ACLU wants the Federal Communications Commission to treat cable networks along the same regulatory lines that telephone networks are governed. To date, the FCC has classified cable networks as "information services," meaning they don't fall under the same regulatory framework as telephone networks.

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Bankruptcy becoming a new beginning

Restructured companies unload debt, refocus and try to survive in a tough marketplace.

■ BY MICHAEL MARTIN

Metropolitan Ethernet pioneer Yipes last week became the latest in a growing list of competitive telecom providers to shed its formidable liabilities in Chapter 11 bankruptcy and emerge as a restructured company.

The trend of once-broken carriers leaving Chapter 11 as leaner, potentially more viable companies has benefits for customers who stuck by them. And more competitors in the telecom market should mean better pricing and a wider array of services across the market.

But there's no guarantee that these Chapter 11 survivors will succeed in the long term with business plans that aren't markedly different from the designs that led the companies into bankruptcy.

Those that have filed and emerged include Yipes, McLeodUSA, ICG Communications and Covad. Some — such as NorthPoint Communications and Rhythms NetCommunications — filed for Chapter 11 and were sold to other companies. And others, including XO Communications, Williams Communications and Global Crossing, have yet to have their bankruptcies resolved.

For companies with burdensome debts and liabilities, Chapter 11 might be the only path to obtaining further financing, says Nick Maynard, an analyst with The Yankee Group.

"I certainly think there will be more restructurings and failures down the road," Maynard says.

Even if investors have been burned by a firm once, they might invest in it again if they feel there's a chance it can succeed after eliminating its debt, he says.

It's no secret why so many telecom companies have filed for bankruptcy. During the late 1990s, they spent billions of dollars on network equipment and fiber in an attempt to reach as many markets and customers as possible.

The problem was that the demand for telecom services never matched the supply, prices for services bottomed out, and providers were left trying to meet the interest payments on their debt with lower-than-expected revenue.

In Yipes' case, the company didn't build any debt. But it signed long-term contracts for network equipment, fiber and access leases to multitenant buildings during the boom years of 1999 and 2000. When the telecom market began to decline in 2001, Yipes was stuck with fixed expenses that were out of line with the new market reality, says Dennis Muse, CEO of Yipes Enterprise Services. Muse says Yipes tried to renegotiate those supplier contracts to no avail and then filed for bankruptcy.

Yipes' senior management team recently formed a new company called Yipes Enterprise Services, buying most of the assets of the former Yipes Communications. The new company landed $40 million in a first round of funding led by Norwest Venture Capital, and bid for the original company's assets in 10 of its 13 markets, emerging as the highest bidder in all 10.

Norwest, which was also an investor in the original Yipes, still believes in the company's business plan of selling big bandwidth Ethernet services to small and midsize businesses, says Promod Haque, managing partner at Norwest.

Yipes' revenue was growing between 5% and 10% per month before the company filed for Chapter 11, Haque says. The problem was Yipes' high expenses. The new company has renegotiated every supplier contract, numbering in the hundreds, to bring down its expenses. Haque says that should be enough to make Yipes a success.

Muse says Yipes will get to a positive cash-flow position in its 10 remaining markets within 20 months. And the company won't need more than the $40 million first round of funding and an expected $13 million second round later this year to get there.

"Our focus now is going to be exclusively on the 10 markets we have today," Muse says. "We'll build them broader and deeper. We want to get to cash-flow positive before we think of taking our message elsewhere."

Yipes' transformation has helped restore confidence in the company.

"I feel better about them now," says Ed Nickerson, director of IT at LaSalle University, a Yipes customer in Philadelphia. "They seem to have secured some funding and their network is performing well for us."

When Yipes filed for bankruptcy, Nickerson and his IT team were concerned and had begun looking for possible alternatives in case Yipes' network went dark. Yipes did a good job of keeping the university updated on its bankruptcy, he says, and also kept its network running well during the proceedings.

Nickerson says he'd definitely consider signing a new contract with Yipes.

While some investors and clients might be willing to give a once-bankrupt company a second chance, Royce Holland, CEO of competitive local exchange carrier (CLEC) Allegiance Telecom, says that any company filing for bankruptcy is going to lose some trust. Allegiance is considered one of the few successful CLECs and has not filed for bankruptcy.

"People underestimate the effects of Chapter 11," he says.

Companies that file for Chapter 11 tend to lose management, customers and reputation, he says.

"I'm not sure that wiping out the debt through Chapter 11 strengthens them enough to be a viable player," he says.■

Starting a new chapter

Bankruptcy has helped several competitive telecom companies improve their financial positions:

Company	Filed for Chapter 11	Emerged from Chapter 11	Debt eliminated
Yipes Communications	March 2002	July 2002	Negligible, but fixed long-term expenses were renegotiated.
McLeodUSA	January 2002	May 2002	$3 billion
Covad Communications	August 2001	December 2001	$1.4 billion
ICG Communications	November 2000	May 2002	$2.5 billion

Dell adds systems mgmt.

■ BY DENI CONNOR

ROUND ROCK, TEXAS — Dell this week will air a systems management framework that observers say can help its customers run their networks more efficiently than they can with earlier Dell or current third-party tools.

The Smart IT offering provides a consistent Web interface for monitoring Dell's array of server, storage and network gear. It also can monitor third-party operating system, database and other software that run on its systems. Smart IT includes existing Dell management tools and new remote monitoring services.

Analysts say Dell's Smart IT matches up well vs. competitors' offerings, such as Hewlett-Packard's Insight Manager or IBM's Director, which only manage servers.

"There's a fair amount of innovation here," says Jamie Gruener, senior analyst with The Yankee Group. "Rather than looking at the infrastructure as a server or storage environment, Dell is saying it doesn't really matter. That's good because IT managers now have one set of tools to manage their entire environment."

Smart IT comprises existing software such as OpenManage Administrator tools that come bundled with Dell's servers, desktop computers and network gear. Working together, the different pieces can alert systems administrators about problems and alert vendors that parts might need to be replaced. Smart IT supports management software from other vendors such as BMC, Computer Associates and IBM Tivoli.

Ray Bauer, senior technical analyst at Chicago Bridge and Iron in Plainfield, Ill., uses Dell's Smart IT to remotely manage an array of servers, workstations and storage in 130 offices around the world. "I can monitor any Dell piece of equipment from my desktop," he says. "It's all integrated. Dell's Navisphere [storage] software is integrated, so I can monitor my storage-area network and array, too."

New to Smart IT is a series of remote monitoring services that let Dell diagnose and repair customer systems from afar upon receiving alerts from devices and operating systems. Having a dedicated management station at one of Dell's Expertise Centers starts at $500 per managed node, per year.

Dell: www.dell.com

Problem solved

Dell's average resolution time for server problems is 1 hour compared with 4.6 hours for the rest of the industry. Dell says it resolves 90% of server issues over the phone.

SOURCE GARTNER

Retailers spur UCCnet momentum

There's a buzz about UCCnet's data synchronization method; software vendors want in on the market.

■ BY ANN BEDNARZ

With an eye toward more quickly and accurately communicating product information and stocking store shelves, some influential retailers and manufacturers are encouraging their peers to adopt universal data synchronization methods developed by standards organization UCCnet.

The idea is that if all parties agree to a common language, a supplier can prepare item information just once and immediately disseminate it through UCCnet to any trading partners that also are subscribers. Inaccurate item information leads to wasted money — up to $50 billion each year, UCCnet says.

UCCnet is a subsidiary of the Uniform Code Council, which developed the familiar Universal Product Code (UPC) system, which identifies a product and its manufacturer through a scannable bar code. UCCnet's charter is to create a standard method for retailers and suppliers to share information about new and existing products.

To accomplish its goals, UCCnet runs an XML-based repository called Globalregistry for handling product information. The group has devised 62 standard product descriptors — such as SKU number, size, weight, availability and pricing — with which participating retailers and suppliers agree to work.

So far, 124 retailers and suppliers have joined the UCCnet community, including heavy hitters such as retailers Ahold USA, Wal-Mart Stores and Wegman's Food Markets, along with suppliers Procter & Gamble, General Mills, Coca-Cola Enterprises, Kraft Foods and Sara Lee. Annual subscription fees range from $1,500 for companies with less than $25 million in revenue to $400,000 for companies with more than $50 billion in revenue.

The organization's goal is to hit 600 subscribers by the end of this month — a deadline it might not reach, UCCnet acknowledges. "If we don't make it in July, we'll make it shortly thereafter," says Glenn Dubois, vice president of business development at UCCnet.

Spurring the membership drive are public endorsements from industry associations, such as Grocery Manufacturers of America and Food Marketing Institute, and from some vocal early adopters. Steve David, CIO and business-to-business officer at Procter & Gamble, says his company had more than 60 databases, none of which had information listed correctly.

"The minute we put our information into a master data warehouse, we recouped our investment," he says.

Randy Salley, Wal-Mart's vice president of merchandising systems, says Wal-Mart joined UCCnet with the intention of eliminating rekeying of item data, speeding the process of introducing products and making it easier for merchants to review and approve data.

Wal-Mart in April asked its 20,000-plus suppliers to participate in UCCnet — but the retailer doesn't want to mandate that its suppliers join, Salley says.

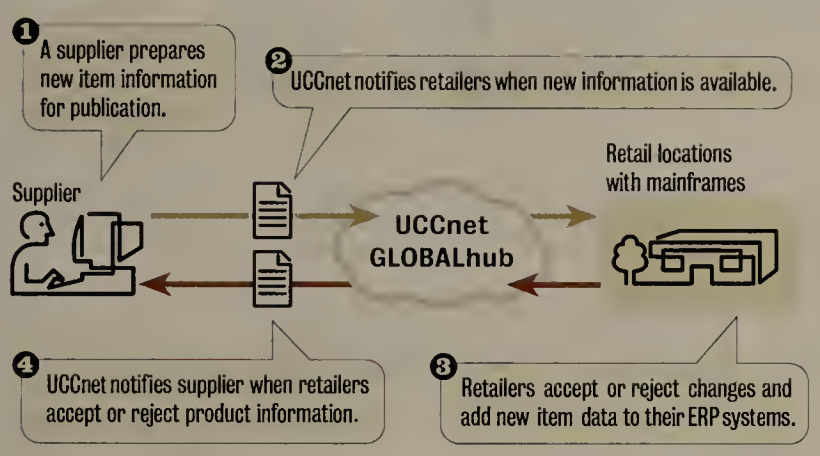
Standing by to help with the application integration required for UCCnet participation is a bevy of vendors with a range of packaged software and professional services offerings.

Commerce One just announced its new Xpress Suite tools and services to help companies load item and partner content into the UCCnet Globalregistry. The vendor says that for less than $25,000, it will get a manufacturer up and running with UCCnet in just two weeks; a fully integrated rollout typically can be done for less than $200,000, says Dan Staresinic, vice president of UCCnet Adoption for Commerce One's e-Business innovation division.

In addition to Commerce One, UCCnet has more than 35 alliance partners with expertise in application integration, business-to-business transactions, catalog and content delivery. Microsoft is about to become the latest alliance partner, says Fred Geiger, UCCnet's senior vice president of product management. Vendors that have recently updated their products with support for UCCnet's latest release include HAHT Commerce, IBM and SeeBeyond Technologies. ■

In between supply and demand

UCCnet is looking to simplify data synchronization among retail suppliers and buyers.



Alcatel looks to ease QoS deployment

■ BY PHIL HOCHMUTH

CALABASAS, CALIF. — Alcatel this week will release an updated version of its management software that could help businesses manage a large-scale Alcatel network, while simplifying quality-of-service deployment for applications such as voice over IP.

For Alcatel-based shops, the updated OmniVista 2000 Version 2.0 network management software will aid in QoS deployment by supporting preconfigured templates that automate the process of configuring Layer 2 and Layer 3 switches for voice or data prioritization.

Version 2.0 adds support for Alcatel's OmniSwitch 7000 and 8000 line of enterprise core devices, along with OmniStack stackable switches and some OmniAccess routers. The software can be used to map out topology views in networks based on Alcatel products. Users also can collect statistics on network performance across multiple devices to look at trends. The software can set up alerts for switches or switch ports, where administrators can be notified of problems such as excessive traffic.

OmniVista 2000 can integrate with enterprise network management software such as Hewlett-Packard's OpenView and Computer Associates' Unicenter.

"Were looking for something that's more than just a box manager," says Willis Marti, associate director of computer and information services networking at Texas A&M University in College Station. The university has more than 500 Alcatel switches and routers in its network, including the OmniSwitch 7000 and 8000 products. "The [OmniVista 2000] hasn't completed the journey, but it's taken a giant step toward being a true system manager," Marti says, adding that he would like to see more support for older Alcatel products in the platform.

Technology challenge

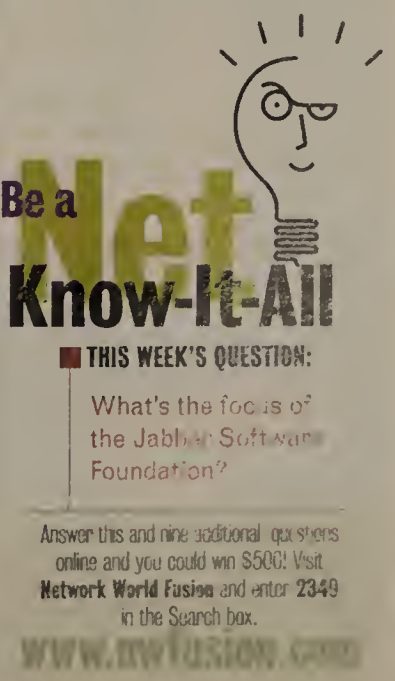
Observers say Alcatel has struggled to integrate technology from its purchases of switch makers Xylan and Packet Engines. This is evident in that while OmniVista integrates newer Alcatel gear, such as the OmniSwitch 7000 and 8000, the software is weak on supporting older products, such as integrating QoS management with older switches such as Alcatel's Packet Engines-based OmniCore products. Also, if a business wants to roll VoIP management into OmniVista, a separate OmniVista 4760 management product is needed to manage Alcatel's OmniPCX 4400 IP PBX device.

Alcatel says it will integrate voice, VPNs and more of its acquired/legacy products into new OmniVista releases next year. A downturn in overall enterprise revenue has slowed this kind of network management integration, according to the vendor.

The OneTouch QoS feature of the software's PolicyView module gives users a graphical user interface where they can choose preconfigured One Touch Voice or One Touch Data QoS templates, and apply the settings to subnets across the network. Settings can be configured once and distributed across multiple switches, which eliminates the time-consuming work of configuring individual switches through each device's command line interface. Proper Layer 2 802.1p and Layer 3 Differentiated-Services- and type of service (TOS)-based QoS settings are adjusted without the user having to configure Layer 2 and Layer 3 QoS mappings.

An Expert Mode lets users configure QoS policies based on IP addresses, individual machines on the network or individual protocols. Diff-Serv, TOS and 802.1p settings also can be defined on a more detailed level.

The OmniVista 2000 software starts at $4,500, and the PolicyView with OneTouch QoS starts at $12,500. The products are available now. ■



Security

continued from page 1

where people have access coupled with tools to create a single point of authentication is a big opportunity," says Richard Perry, director of enterprise operations and security for The Burlington Northern and Santa Fe Railway Company in Fort Worth, Texas. The opportunity is tighter security, personalized service, accountability and management efficiencies. "But we need standards for that to happen."

The wave of support for SAML likely will stamp it as a de facto standard, although it won't get official approval from the Organization for the Advancement of Structured Information Standards (OASIS) until fall at the earliest. The only snag could be that Microsoft has yet to commit to SAML, instead focusing on Kerberos as a way to pass authentication information. But Microsoft's commitment to WS-Security, a set of proposed standards it created with IBM and VeriSign and now under review by OASIS, could eventually bring the company into the fold.

SAML is but one important step in creating user authentication and authorization information that is portable across corporate networks so a user authenticated on one company's network can be recognized on another and granted or denied authorization to access resources based on that authentication. This sharing of user identity is being referred to as federated identity management and is emerging as a key technology for distributed e-commerce and Web services.

Perry says SAML "is the first hope for single sign-on in the Web environment."

And Perry knows the benefits of centralizing user access. Last year, he deployed provisioning software from Waveset Technologies to automate account creation and deletion for 45,000 internal users across four different back-end systems and countless applications.

"Now we have centralized user-account control, and we've cut in half the time it takes to establish, change or delete an account," Perry says. His next step is to add single sign-on. "If we can deploy that and make it secure, it's a big competitive advantage."

That's because use of a single user identity lets companies more efficiently control who gets on their networks and what resources they use. They can use ID information to personalize services and portal interfaces. The IDs also can identify not just users but machines that need access to execute Web services in tandem with other machines.

"We expect SAML to have a major-league impact on us," says a vice president for information security with a top financial services firm who asked to remain anonymous. "We can save millions of dollars with a centralized identity system."

The reason is that maintaining user IDs and access controls for potentially millions of users or machines is nearly impossible without combining existing technologies and creating new standards.

"Companies looking at value chain optimization or integrating business processes across company boundaries can't do that on any scale without identity management," says Jamie Lewis, president of Burton Group, which this week will publish a 44-page report called "Toward Federated Identity Management."

Corporations are in the early stages of creating these security infrastructures internally with proprietary products, such as Web access management and provisioning software.

But those products don't scale to Internet proportions because they don't talk to one another and they rely on duplicating information between partners using delegated administration or data synchronization.

But standards alone won't solve the problem. The answer lies in combining standards with policies that govern how shared identities can be used and with integrating security technologies, such as directory, access management, provisioning, workflow and portal software.

Ross Spencer, information security manager for Royal & SunAlliance, one of the largest insurance firms in Canada, knows the issues firsthand.

His company is working with Canada's Centre for Study of Insurance Operations to set up a federated identity management system that would let brokers sign on once and get access to quotes from many insurance providers.

"The issues are getting companies on board, the politics and the need for agreements and contracts to govern identity," says Spencer, who currently uses Netegrity's SiteMinder to support single sign-on for 7,000 internal users.

Standards work also is far from finished and it is not aligned across the industry.

For example, SAML does not specify any policy for using identity information. The Liberty Alliance specification will build on top of SAML, adding some policy protocols. Also, SAML does not incorporate a way to establish trust between business partners exchanging identity information.

And SAML, which has strong authentication services, will need the help of another emerging XML-based protocol called XML Access Control Markup Language to solve the more complex issue of authorization. A third protocol — the Services Provisioning Markup Language — also will have to be incorporated.

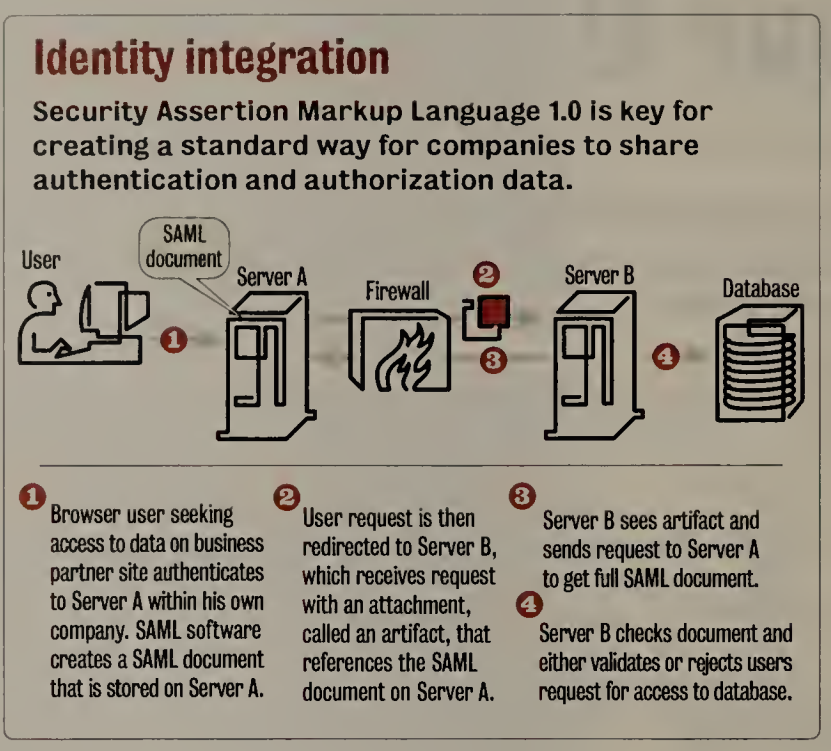
There are other, competing efforts. Microsoft is working on integrating its Passport service with Kerberos, as opposed to SAML, to create a single sign-on credential similar to Liberty's work. Microsoft also is developing TrustBridge, another product to unify sign-on across Microsoft environments, and focusing on Extensible Rights Markup Language, an authorization protocol similar to XACML.

At the conference, OpenNetwork Technologies will try to minimize the standards conflict by demonstrating interoperability between Microsoft Passport and SAML using the company's DirectorySmart access management platform.

Despite all the issues and the fact that federated identity management will roll out slowly, experts say its arrival is guaranteed.

"The security model today is designed to allow people in. It's security of inclusion not exclusion, and that is creating the identity management issue," says Joe Duffy, a partner with PricewaterhouseCoopers Consulting Services.

"Identity management is a fundamental part of any Web-based infrastructure," he says. "And it will be extended to include legacy and other enterprise applications." ■



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Corrections

- A chart accompanying the story "WorldCom users [illegible] options" (July 1, page 1) inadvertently omitted the source for the final two items. WorldCom's share of Internet [illegible] revenue and Internet network capacity was supplied by research group TeleGeography and is contained in its TELEGEOGRAPHY 2003 report.
- In the story "Firewall [illegible]s vex VoIP users" (July 8, page 1), Marc Sh[illegible]'s last name was misspelled.

Identity management tools on tap at Catalyst

Vendors will be out en masse at this week's Catalyst Conference, mostly introducing products that support identity management.

Netegrity will announce support of Security Assertion Markup Language (SAML) in SiteMinder 5.5, which is due in October. It will also support SAML in a new product called Transaction Minder, which authenticates the source of XML documents used in Web services and authorizes their use against a set of policies. The company also will ship in October a product called Identity Minder, a provisioning system for adding, changing and deleting user accounts for Web-based and legacy systems. The products are the heart of an identity management platform Netegrity is creating.

Separately, rival Oblix will unveil support of SAML in NetPoint 6.0 and will announce its intention to join the Liberty Alliance, which is creating a single sign-on specification.

Novell will unveil its Destiny strategy, a 12- to 18-month evolutionary road map for eDirectory to create security, administration and user controls for identity management.

Destiny will tie together Novell's DirXML metadirectory and Novell Provisioning into a dynamic identity mechanism and add support for SAML, public-key infrastructure and Kerberos to eDirectory. Novell also will add support for Web services protocols Simple Object Access Protocol and Universal, Description, Discovery and Integration to its directory.

Waveset Technologies will announce an alliance with Funk Software to offer provisioning software for VPNs and wireless networks. Waveset is integrating its Lighthouse provisioning software with Steel-Belted Radius servers and Odyssey security software for wireless LANs.

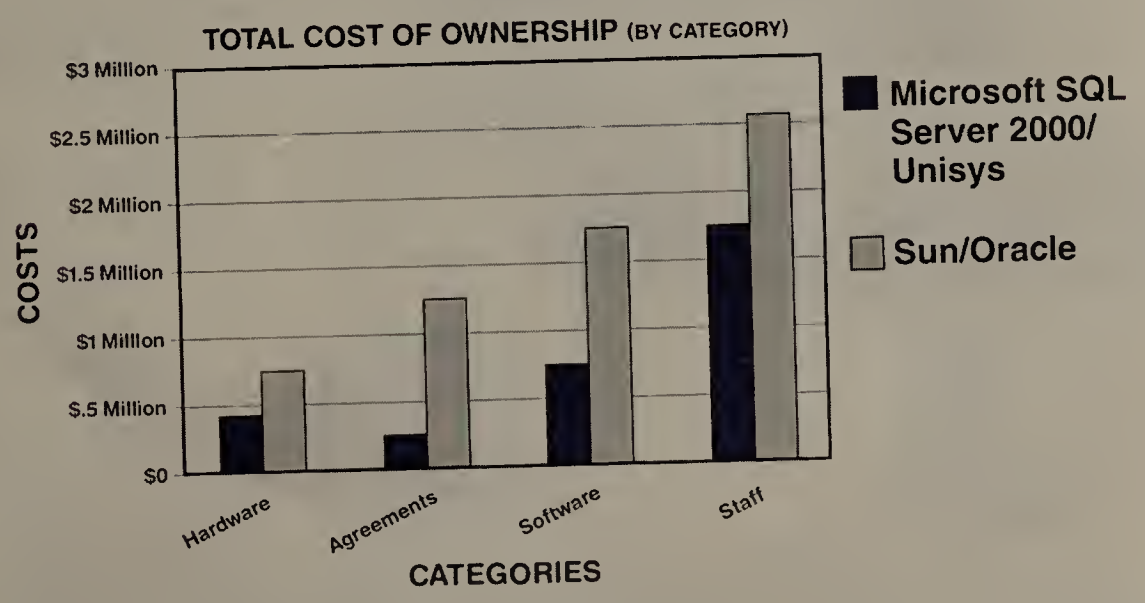
Baltimore Technologies will unveil support in its Web access management software for Citrix thin client software.

— John Fontana

Walklett Group

Figure 6

The Microsoft® SQL Server™ 2000/Unisys BI solution offers $3.2 million in savings compared with the Oracle/Sun system over a five-year period.



We discovered that the current state of Windows® and Intel solutions offers considerable savings and an attractive alternative to the classic RISC/UNIX solutions for BI implementation.

Source: Walklett Group, February 2002

Going with the facts saves money.
microsoft.com/sql/tco Software for the Agile Business.

Users wary of new Oracle software

■ BY JOHN COX

REDWOOD SHORES, CALIF. — Oracle may find that drumming up business for its new Collaboration Suite is more like beating a dead horse.

The software giant last week unveiled a set of applications — e-mail, file system, calendar, voice mail, workflow — that run on its basic software foundation of 9i Application Server and 9i Database. The idea is to use the Oracle database to store, manage and protect all this information, and let any kind of client device access it, whether handheld computer, PC or cell phone.

But Oracle faces a wary group of enterprise customers who were burned by its past efforts in office and groupware products, such as the short-lived Oracle Office and it's almost-as-short-lived follow-on, InterOffice.

"We didn't have a very good experience with their office software," recalls the CTO for a university in the East.

He asked not to be identified because he has a "good relationship" with Oracle based on the company's database and other products. "I don't think they had their heart in that product," he says.

Given the usage patterns of faculty and students, the whole idea of linking e-mail to a database is of questionable merit, he says.

"A database [in that configuration] induces overhead," he says.

Oracle cites two main benefits with its latest approach: the ability to handle lots of data and users by running on clusters of servers, and much lower license and operating costs compared with Microsoft products.

Built-in interfaces let users work with the Microsoft Outlook Web client, or any Web browser, and link to servers running Microsoft Exchange or Lotus Notes. Web services protocols can be used to link Collaboration Suite with other applications.

The suite is expected to be available later this year. The price for a perpetual license is $60 per named user.

Oracle: www.oracle.com

Recovery

continued from page 1

good," said Ross, who acknowledged that Deloitte & Touche hadn't tested or maintained its plan for years. Although the firm had an alternate data center site in New Jersey, it wasn't possible to get employees there.

In any disaster-recovery plan, "people issues are paramount," Ross said. One Deloitte & Touche employee died during the attacks. "We had counseling services made available immediately," he said.

In the aftermath of the destruction and the widespread telecom failures in New York, it was hard to track down employees, although as part of disaster-recovery planning before Sept. 11 everyone was given "emergency cards" to phone in their whereabouts. Deloitte & Touche's downtown New York office LAN was destroyed, though connectivity was restored a few weeks later at another location.

Corporate e-mail was unaffected. Voice mail was available for top executives immediately and eventually restored for the rest of the staff. Deloitte & Touche ended up leasing four floors in the Marriott Marquis hotel — coincidentally, where the ISACA conference was held.

"Until Sept. 11, I never dealt with a client by asking 'What if you died?' What if all these people died?' But now I do. I have to," he said.

Many security professionals see the world darkening. An apocalyptic view of the Internet ravaged by computer worms, denial-of-service (DoS) attacks and routing-table meltdowns was forecast by keynote speaker Howard Schmidt, President Bush's cybersecurity adviser.

"The routing tables of the future will be unmanageable. There will be slowdown and failures, and malicious and criminal activity between 2002 and 2009 ... all [of which] mean the Internet quits working," said Schmidt, underscoring the dire need to improve security now (see story at www.nwfusion.com, DocFinder: 1244).

That view might seem alarmist. But security professionals said at the conference that fending off worms such as Nimda (which debuted a week after Sept. 11), distributed DoS attacks, in which an attacker bombards a Web site or other device with IP floods from hundreds of compromised machines, and nonstop hacking attempts, have become their everyday battleground.

Fidelity Investments has managed to stave off incessant hacker break-in attempts, said Steve MacLellan, the investment firm's IT security-practice manager. "Hackers look at Fidelity and see money," said MacLellan.

Fidelity monitors danger via intrusion-detection systems, including those from Internet Security Systems and Cisco, which record anywhere between a half million and 1.5 million attempted break-ins or suspicious scans each day. Fidelity collects the data to create an overview, even hiring a mathematician to analyze patterns. "You have to put IDS across the firm," he said.

But on Sept. 18, Fidelity was hit by the Nimda worm, which forced the shutdown of 700 servers, minutes after a single employee's computer had been infected while using the Web.

"The shock of this told us we had to change what we were doing," MacLellan said. Nimda exploits unpatched holes in Microsoft Web servers and browsers. Three days is the fastest that Fidelity, a big Microsoft customer, can commit to patching all its enterprise software used by 32,000 employees.

As a new defensive measure, Fidelity is starting a content-inspection pilot project with Nortel that will have the Nortel-based VPN enforce a security policy that will restrict workers from using the network unless certain patches are installed along with up-to-date antivirus scanning software. Fidelity also is working with Microsoft to improve its patch-automation process.

Fidelity is on guard against distributed DoS attacks. It was hit by a large one in March. The attack was fought off by blocking IP traffic via a Top Layer Networks switch and by working with multiple ISPs to filter out attack traffic.

"You have to work with the ISPs on this," MacLellan said. "But one major ISP refused to work with us, even though the contract we had said they would." MacLellan, who declined to name the ISP, said Fidelity has since dropped it.

Fidelity also is looking into how specialized equipment might help defend against massive IP floods that come with a distributed DOS attack.

"We expect to be in firefighting mode for the next two to five years," MacLellan said, noting one of the biggest dangers is a hacker trying to tamper with Web-based e-commerce applications. Application security tools such as those from Sanctum, Foundstone and ISS can be of some help in filtering out such application-targeted attacks, he added. ■

KATHLEEN KING

"The routing tables of the future will be unmanageable. There will be slowdown and failures, and malicious and criminal activity ... all [of which] mean the Internet quits working."

Howard Schmidt
Presidential adviser on cybersecurity

Hard lessons

What Deloitte & Touche learned from the World Trade Center disaster:

- Organizing people after a calamity is harder than recovering data systems.
- Geographic dispersion of data centers and business operations is essential.
- Designations of "critical" and "noncritical" data are somewhat meaningless.
- Transportation system disruptions were worse than anticipated.
- There was a broad need to help suppliers and competitors in trouble.
- Contiguous disruptive events (such as the Nimda virus days later) complicated recovery.

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IBM set to revamp storage server

Big Blue to upgrade high-end 'Shark' array.

■ BY DENI CONNOR

ARMONK, N.Y. — A version of IBM's high-end storage server debuting this week will provide access to data at twice the speed of the existing product, the company says.

IBM is introducing a next-generation "Shark" — formally known as TotalStorage Enterprise Storage Server — that scales to 22 terabytes of usable capacity and reduces user response time by half. Faster copper microchips, 2G bit/sec data transfer, double the bus width and an expanded cache give Shark its performance boost, IBM says.

Claiming it offers twice the performance of previous models, IBM hopes the newest 'Shark' will help gain market share.

Mike Kahn, an analyst with Clipper Group, says Shark excels at online transaction processing.

"Online transactions continue to grow unpredictably," Kahn says. "In many cases it's not that people aren't getting the transactions handled fast enough — it's that as the number of transactions continues to grow, the only way they can keep up the speedy response is to have more capacity to deliver. That's what this Shark allows."

The new Shark is available in two models: 800 and 800 Turbo. The 800 model uses four symmetrical multiprocessors; 800 Turbo adds two more multiprocessors, for a 150% increase in storage operations per second over previous Sharks.

IBM says it has shipped 10,000 Sharks since the array's introduction in 1999. Shark competes with Hitachi's Lightning and EMC Symmetrix.

IDC sees rapid growth for storage systems in this high-end arena, predicting the market will grow from $15.6 billion last year to more than $215 billion in 2005.

IBM accounted for about 12% of this market last year, according to Gartner, ranking fourth, behind EMC, Hewlett-Packard and Hitachi.

IBM also has filled in the low end of its storage line with the announcement of TotalStorage NAS 100, an Advanced Technology Attachment disk-based network-attached storage server with 500G bytes of capacity and hot-swappable drives. It costs $4,420 and is expected to be available next month.

Shark is priced starting at 15 cents per megabyte. IBM expects it to be available next month.

IBM: www.ibm.com

Sieve

continued from page 1

know that mail is coming from a family member and file it into a family folder. They want mail generated inside the corporation to go into a corporate folder."

Morris says Sieve helps end users who have different means of accessing e-mail — for example, Microsoft Outlook at the office and Web-based e-mail from home — create a single, unified view of their in-boxes and extend that to PDAs.

"Sieve is a way of accomplishing that by binding all the filters," Morris says.

No one who spends much time on the Internet doubts the need for e-mail filtering techniques such as Sieve.

"The average corporate e-mail user gets about 34 messages per day," says David Ferris, president of Ferris Research, which monitors the messaging market. "It's growing at about 30% annually."

Most companies filter inbound e-mail for viruses, but it's not as common for companies to filter employee e-mail for spam or for questionable content. Although popular corporate e-mail packages support the creation of productivity-oriented filters such as Sieve, few users know how to take advantage of these features.

Existing tools for managing e-mail volume go largely unused, Ferris says, adding that these tools are often too tricky for end users to master.

Sieve promises to change that dynamic by letting end users write simple mail filters based on e-mail header information using a graphical user interface. These filters are executed when messages are moved to the end user's mailbox. End users can write filters to prioritize e-mail from certain people, automatically delete e-mail from others, and create separate folders for messages from mailing lists, family members or co-workers. Filters also can be written to forward specific types of messages to the end user's handheld device.

Before the development of Sieve, messaging products from Microsoft, IBM and Mirapoint offered e-mail filtering using proprietary techniques. As an open Internet standard, Sieve provides a common way to create and share e-mail filters across diverse e-mail systems.

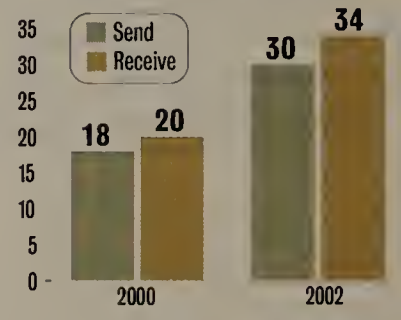
Sieve is designed to run on any mail server or operating system, and it supports both the POP and Internet Message Access Protocol e-mail standards.

With Sieve, filtering is done at the server rather than the client, which means end users don't have to download messages they want filtered. This is especially useful for mobile or remote workers and those using handheld devices.

"Server-side is the way to go with e-mail filtering, especially if you don't read your e-mail in one place," says Tim Showalter, author of the IETF's Sieve document and a member of the technical staff at Mirapoint, an e-mail appliance manufacturer that has yet to announce a Sieve-compliant offering.

Ever more e-mail

Average number of e-mails corporate users send and receive per day:



SOURCE: FERRIS RESEARCH

The IETF published Sieve as a proposed standard in January 2001, but development work continues to create extensions for vacation autoresponse messages, notifications to pagers and cell phones, and regular expressions in the Sieve language.

One challenge for Sieve is that it doesn't yet have the support of the most popular corporate e-mail packages: Microsoft Outlook and Lotus Notes.

However, larger ISPs such as AT&T use Sieve in their backbone message filtering. And a few Sieve-compliant products are available including Sun's One Messaging Server, Rockliffe's MailSite Internet messaging software, Critical Path's Messaging Server and Cyrusoft International's Mulberry Internet mail client.

Meanwhile, Sendmail officials say Sieve-based filtering will be available in Version 2.0 of Sendmail's Advanced Message Server, due out this fall.

Although Sieve has great potential for end users, the technology is primarily used today by network managers to filter lengthy e-mail attachments, executables and spam. This is because only a few e-mail packages — including Sun's and Cyrusoft's — support writing Sieve filters at the client.

J&J Industries, a Dalton, Ga., carpet manufacturer, uses Sieve filters on its Rockliffe MailSite server as an extra line of defense against viruses. Terry Lockwood, manager of IT, set up a Sieve filter to block executable attachments that aren't caught by the company's Norton Anti-Virus software.

"When the Klez virus first came out, we were getting about 40 of those a day, and they were all blocked with the Sieve filter," Lockwood says. "When the Kournikova virus came out, we had just implemented Sieve filters three weeks before that. We must have had 200 to 300 catches of that on the first day."

He says setting up the Sieve filters was "extremely easy" because of MailSite's wizardlike menus.

Next, Lockwood plans to write Sieve filters to minimize the amount of spam the company receives by using publicly available blacklists.

"Our business is increasingly relying on e-mail for correspondence," Lockwood says. "One of our competitors in town had to shut down its e-mail server for two days because of viruses, and we didn't have to do that because of our e-mail filters."

Similarly, Thales, a Herndon, Va., maker of recording equipment for 911 and call centers, uses Sieve filters on Rockliffe's MailSite server to block executable attachments.

"With the Sieve filters in conjunction with our virus protection from McAfee, we haven't had a virus outbreak in over a year," says Gary Mitchelson, IT manager at Thales. "We're catching about a dozen per day."

Mitchelson wrote several other Sieve filters to block spam messages with undisclosed recipients and to serve as a backup to the company's help desk system by capturing all the trouble tickets sent via e-mail. He also uses Sieve to monitor the e-mail of employees that managers suspect are abusing e-mail or sending out confidential information.

"The Sieve filters capture everything that I've intended for them to capture, and it doesn't look like they put any load on the server," Mitchelson adds. ■

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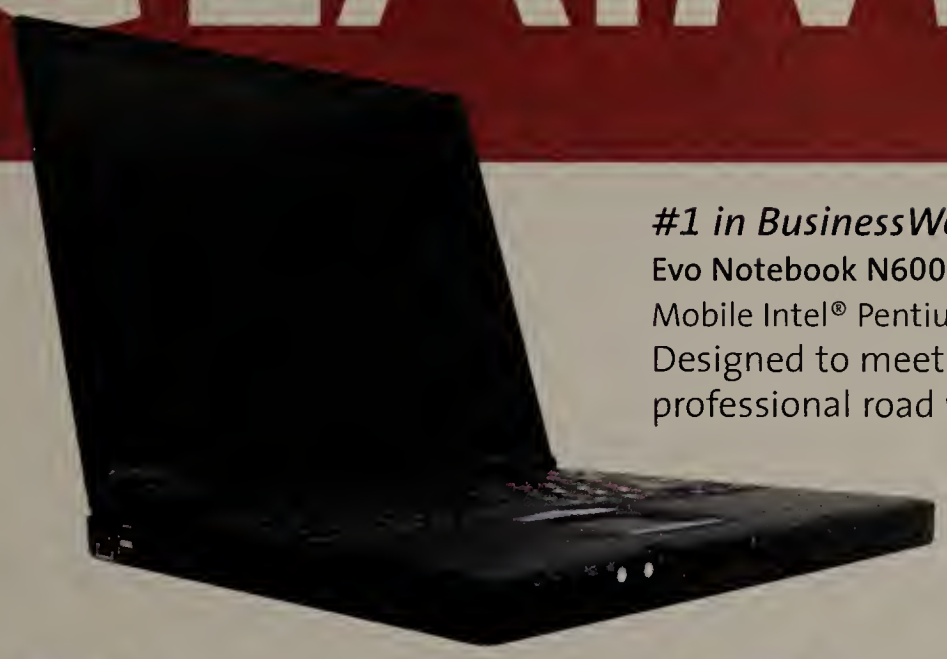

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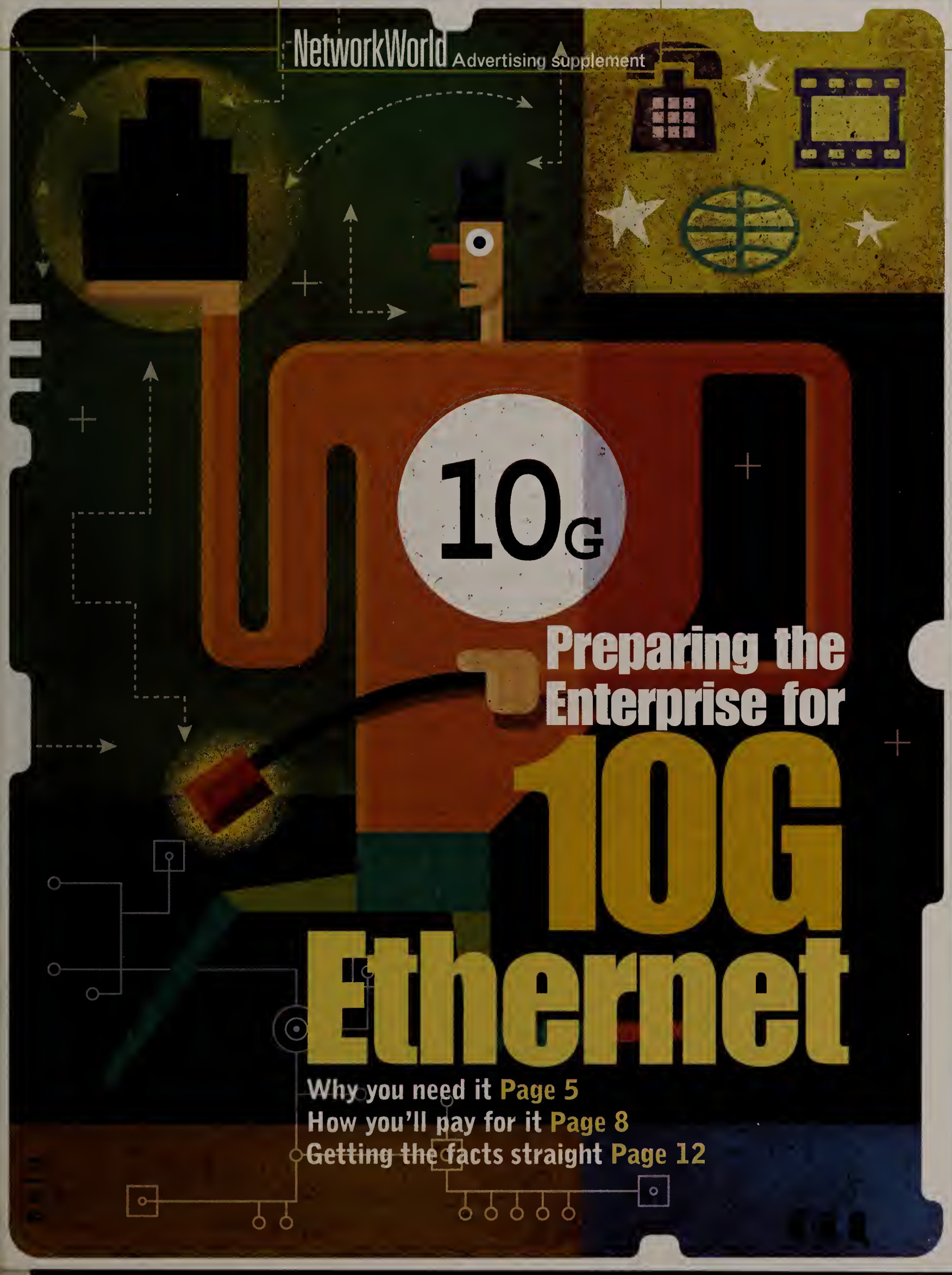


10G

Preparing the Enterprise for 10G Ethernet

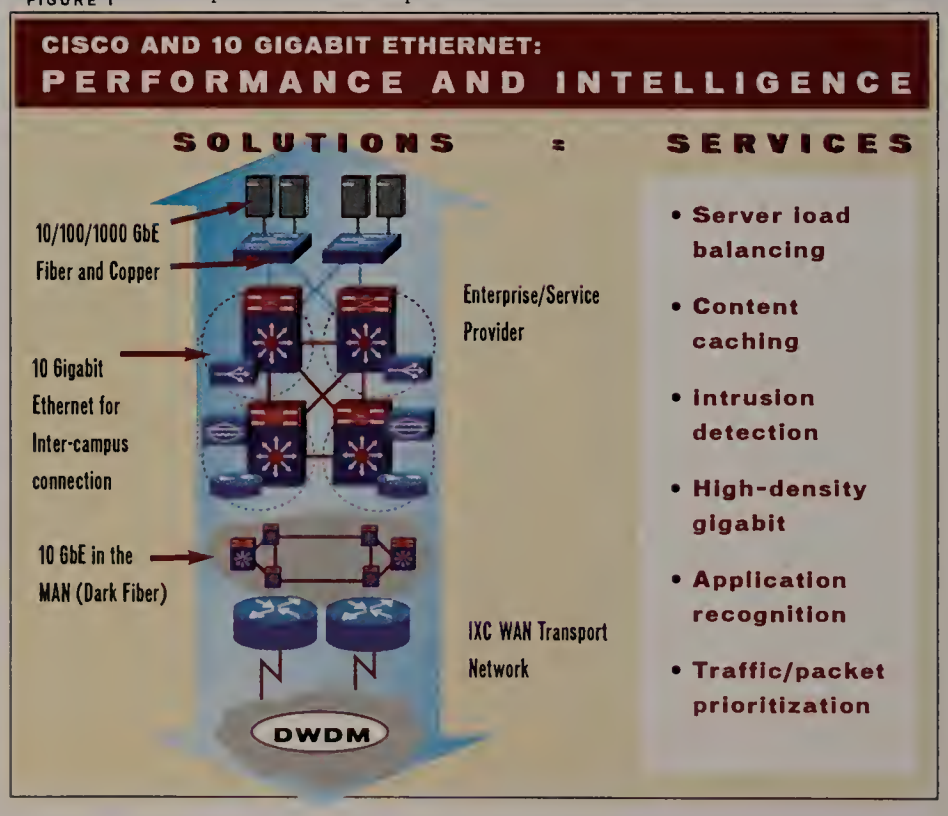
A COMPELLING CASE FOR DEPLOYING 10GbE Today

DESPITE TODAY'S COMMON BELIEF THAT THERE IS A BANDWIDTH GLUT, enterprise and service provider networks must continue to grow and to support high-speed services. 10 Gigabit Ethernet (10GbE) technology from Cisco Systems delivers not only high bandwidth for campus and metro networks, but also associated connectivity services that enhance network availability, security, and manageability.

The 10GbE technology available today is optimized for metropolitan and building-to-building interconnectivity. Cisco 10GbE solutions protect investments in existing fiber infrastructure while increasing network reach and enabling Ethernet connectivity end-to-end. Because 10GbE integrates seamlessly with 10/100 and Gigabit Ethernet, the technology also accommodates the basic design principles used in today's networks.

Figure 1 shows example 10GbE implementations in enterprise and service provider networks.

FIGURE 1



THE MANY BENEFITS OF 10GbE

Enterprises and service providers can deploy 10GbE technology today and enjoy a host of network advantages, including faster and easier deployment of applications such as storage-area networks, server-less buildings, data center remote mirroring, and disaster recovery. 10GbE technology also enables a single network to transport streaming video, imaging, 3D modeling, voice, and rich media. These applications in turn enable business and scientific collaboration, telemedicine, and distance learning.

"When we started using Cisco's 10 Gigabit Ethernet technology, we found we could quickly and cost-effectively scale our existing IP infrastructure for greater performance, security, and flexibility, even when deploying rich media like video over IP," said Andrew MacDonald, manager of network services at Curtin University of Technology.

The large amounts of scalable bandwidth delivered by 10GbE support network growth as well as highly available campus and metropolitan networks. Service providers gain a new technology choice for deploying high-bandwidth connections between points of presence (PoPs) and offering better network performance to customers. "10Gbps is a fantastic speed increase that we are sure will keep us ahead of the pack," says Daniel Nofal, chief technical officer at iplan networks in Argentina. "When 10 Gigabit Ethernet is installed, we will be able to reduce [customer] prices on our 1 Gbps links, which will be extremely useful for disaster recovery, remote storage, and company backbone links."

The Cisco Catalyst 6500 Serial 1550nm 10 Gigabit Ethernet module extends 10GbE connections up to 40km.

CHOOSING A 10GbE SOLUTION

The ability to fully realize the benefits of 10GbE depends on the strength of the network solution. Cisco offers 10GbE solutions that deliver intelligent network services, an end-to-end Ethernet infrastructure, standards-based interoperability, and scalable performance from Gigabit Ethernet to 10GbE.

The award-winning Cisco Catalyst 6500 Series switches offer a choice of modules, each supporting 10GbE intelligent network services over single-mode fiber. The module with Serial 1550nm optics supports distances of up to 40 km for extended-reach connections between POPs or campuses. The module with Serial 1310nm optics supports distances up to 10 km for long-reach connections between buildings or short-reach connections between racks. Both modules support the newly ratified IEEE 802.3ae standard and deliver the additional advantages of scalable bandwidth, investment protection, savings in fiber costs and simplified operations—all without technician retraining.

"The Cisco Catalyst 6500 10 Gigabit Ethernet modules provide the scalable architecture necessary to cost-effectively manage and deliver bandwidth-intensive traffic," explains Dr. Hiroki Takakura, associate professor of the Data Processing Center at Kyoto University. "The modules will also help me achieve better network response time and I can keep my network management responsibility simple because these modules are supported by the same CiscoWorks 2000 management suite as the rest of Cisco's Gigabit Ethernet equipment."

For Cisco 12000 Series Internet Routers, a 10GbE module delivers dedicated, line-rate 10 Gbps ports ideal for intra-POP connectivity and connectivity between POPs in a metro area. Service providers can more cost-effectively scale distribution networks to support higher capacities of IP and Multiprotocol Label Switching (MPLS) traffic. By adding a 10GbE module, existing Cisco 12000 Series Internet Routers can deliver more sophisticated and higher-value network services without increasing network complexity.

The Cisco ONS 15540 Extended Services Platform provides for 10GbE over Dense Wave-Division Multiplexing with optical technology.

The Cisco ONS 15540 Extended Services Platform provides a scalable solution for standards-based 10GbE over Dense Wave-Division Multiplexing (DWDM) by offering up to 32 Gigabit Ethernet links on a single fiber. The Cisco ONS 15540 can easily integrate lower-speed services—such as Fibre Channel, Gigabit Ethernet, Synchronous Optical Network (SONET), and several other protocols—onto the same fiber plant. Network managers can monitor the performance of 10GbE circuits running over DWDM to provide quicker problem resolution and compliance with service-level agreement (SLA) guarantees.

The Cisco 12000 Series Internet Routers now support 10GbE modules, enabling them to deliver more sophisticated and higher-value network services.

At the core of these products is the Cisco IOS™ software, which enables critical network services including high availability, security, quality of service (QoS), and manageability. These services can be delivered at line rates over the Ethernet network and supported over all physical infrastructures in local-, metro-, and wide-area networks.

10GbE MAKES A COMPELLING CASE TODAY

Applications and demands for 10GbE bandwidth will only increase, making 10GbE an attractive technology to consider now. Cisco's superior solutions for 10GbE technology in campus and metro networks provide a natural migration from Gigabit Ethernet, in which Cisco leads the market for innovation and ports shipped. Cisco solutions offer both enterprises and service providers a clear migration path to 10GbE today and the foundation for sustained value in the future.

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*IEEE 802.3ae specification for 10 Gigabit Ethernet was unanimously approved by the IEEE Standards Association Board in June 2002.

Making the Case for 10G

Demanding users, new applications, Gigabit rollouts and falling prices will soon make 10G Ethernet a necessity in the enterprise network

STEVE JONES

Greg Williamson of Arkansas State University says the school is now supporting applications it "couldn't even think about" prior to installing a 10G Ethernet network.

By Steve Ulfelder

Two years ago, when Arkansas State University decided to upgrade its campus LAN, the school opted not only to converge its voice and data infrastructures but to bring Gigabit Ethernet to users' desktops. Initially, the Jonesboro, Ark., institution planned to provision bandwidth by trunking together Gigabit Ethernet links, according to Greg Williamson, associate director of information and technology services. "At the time, there was no 10G Ethernet out there in vendors' product lines," he says.

Then Cisco Systems Inc. began offering 10G Ethernet modules, or blades, for its Catalyst 6500 line of switches. Arkansas State ran the cost and return numbers – and today offers 10 Gigabit Ethernet to more than 10,000 students and faculty. "It just made sense," says Williamson.

Plenty of network managers and analysts agree: with standards firming up fast, vendors putting product in the pipeline, and users clamoring for additional bandwidth, 10G bit/sec Ethernet technology is ready to take hold in the enterprise.

Today, nearly all Internet traffic originates or terminates with an Ethernet connection. More than 90% of all enterprise LAN nodes are Ethernet, as are more than 95% of all new nodes being shipped.

Analysts cite several reasons for the rapid enterprise growth of 10G Ethernet. Many U.S. organizations are in the last phase of updating desktops from 10M to 10/100M Ethernet, and the core of their networks from 100M to Gigabit. Meanwhile, Gigabit prices are falling fast, prompting more widespread deployments. Many analysts believe more Gigabit Ethernet will in turn create demand for 10G Ethernet at the network core.

Boston-based Pioneer Consulting estimates that by the end of 2005, service providers and corporations will spend a total of $30.6 billion a year on equipment for Gigabit Ethernet, and $13.5 billion on 10G Ethernet technology. That $44.1 billion marks an 856% rise over 2001 revenue, estimated at $4.6 billion.

According to the Dell'Oro Group Inc. in Redwood City, Calif., 18 million Gigabit Ethernet ports will be in use this year, and that number will rise to 32 million in 2004. By that time, reports Dell'Oro, the 10G Ethernet market will exceed $3.5 billion and will account for 17% of the overall Ethernet switching market.

Doug McEuen, a Pioneer analyst, says today's generally soft economy may hurt 10G's growth, but he expects other factors will compensate. "With the success of Gigabit Ethernet in metropolitan-area

networks, people are realizing they want more capacity and higher speed," McEuen says. "That opens the door for 10G."

Of course, 10G Ethernet is a new technology (or, perhaps more accurately, a new flavor of an existing one), and must fight another venerable technology – SONET – for enterprise mindshare. But 10G offers the enterprise a host of benefits, including the following:

• The technology will eventually bring the Ethernet cost model to 10G bit/sec networks. Experts caution users not to expect rock-bottom prices immediately because the technology is new. "Over the next year, as we hit the right spot on that price/volume curve, the price will drop significantly," says Steve Garrison, director of corporate marketing at Santa Clara, Calif.-based Riverstone Networks Inc.

• 10G Ethernet brings scalability to LAN backbones, enables aggregation of the fast-growing number of Gigabit Ethernet links, and leverages the 250 million existing Ethernet ports. Brad Booth, an Intel Corp. manager who's also a director of the 10 Gigabit Ethernet Alliance (www.10gea.com) and a member of the IEEE's 802.3ae Task Force, says, "Ethernet tends to deal with things at Layer 1 and Layer 2 only; all the management protocols stay the same." Thus, the three decades of experience that corporate IT has with Ethernet is preserved.

• 10G supports local, metro, and wide-area requirements in a seamless network.

• In most cases, 10G Ethernet offers granular bandwidth provisioning. Because SONET is usually leased in large quantities, organizations that require additional bandwidth often pay for more bandwidth than they need. By contrast, 10G Ethernet enables service providers to lease bandwidth in increments as small as 1M bit/sec.

Take a closer look

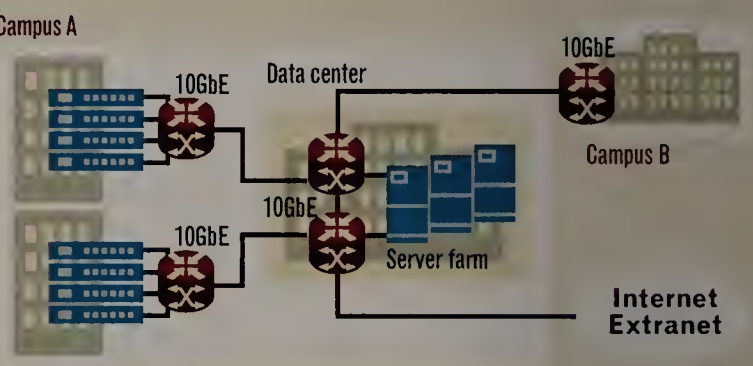
While 10G Ethernet at first glance may appear to be bandwidth overkill for some organizations, there are compelling reasons to take a closer look. For starters, there's the shift toward distributed organizations, which has taken hold due to the global economy (it's not uncommon for engineering teams to include members from three different continents); telecommuting and remote-user trends; and industry consolidation, which often leaves a vast number of employees working for a corporation whose new headquarters is far away.

In all of these instances, workers have come to expect high-speed links akin to what they experience in a traditional headquarters location. That means a large number of high-speed links feed in to the core enterprise network, increasing bandwidth demands.

Moreover, with more bandwidth flowing to end-users' desktops, enterprises find themselves able to fully exploit existing applications – and to devise new ones. Dispersed engineering teams will share CAD/CAM information faster; medical and biotechnology organizations will enjoy rapid data transfer; and global enterprises will find fewer barriers to collaborations with far-flung colleagues.

The many faces of 10G

Initially, network managers will use 10G Ethernet to connect large-capacity switches inside the data center and between buildings. Eventually, 10G Ethernet will be deployed throughout the network, including switch-to-server and MAN and WAN access applications.



SOURCE: 10GIGABIT ETHERNET ALLIANCE

Leading the charge on 10G Ethernet implementations are research laboratories, universities, and military installations. According to Stanley Stevens, a product marketing manager at Portsmouth, N.H.-based Enterasys Networks Inc., the healthcare industry will be another early adopter. "They'll need 10G at medical schools as they deploy more digital-imaging applications," he says.

Among the applications that will drive enterprise demand for 10G Ethernet are Voice over IP, remote storage and backup, video, and engineering collaboration. But there's widespread agreement that, as Riverstone's Garrison puts it, the primary driver is "not any one application, but general human need over time – it's the natural trend of the industry to demand faster PCs, bigger disk drives, smaller boxes, and more bandwidth."

Lawrence Orans, a senior analyst at Stamford, Conn.-based Gartner Inc., cites another key factor. "The biggest driver will be price," Orans says. "Vendors are lowering prices on Gigabit Ethernet to make it a desktop alternative. As we see more Gigabit to the desktop, we'll see more 10G Ethernet to the network core."

According to Williamson, the competitive world of university and scientific research demanded that Arkansas State offer end users as much bandwidth as possible. "These days, science is a huge, collaborative enterprise endeavor," he says. "With 10 Gig, our researchers, teachers and students can access research tools that are otherwise unavailable – like astronomical arrays of telescopes they can remotely control." Similarly, Arkansas State researchers can control electron microscopes anywhere in the world.

"This infrastructure opens up grant opportunities for our professors and researchers," Williamson says. "It didn't make sense to provide a core network that couldn't pass along those massive amounts of data."

Arkansas State built a fully fault-tolerant network consisting of four core locations, each of which uses two Cisco Catalyst 6500s that work in failover mode. "That gives us an infrastructure that's stable enough, and has enough bandwidth, so that we can add VoIP," Williamson says. "It also lets us add new apps such as IPTV servers – we're now doing broadcast-quality and streaming-quality video. "We couldn't even think about those without 10Gig."

Steve Ulfelder is a freelance technology writer in Southborough, Mass. Contact him at sulfelder@yahoo.com.

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Crunching the Numbers

An examination of the total cost of ownership and return-on-investment equations behind 10G Ethernet

By Elisabeth Horwitt

HAROLD CLARK

Taking into consideration the cost of leasing fiber, **Thomas Goldthorpe** determined 10G Ethernet was less expensive for University Health Network than adding more Gigabit Ethernet links.

Toronto-based University Health Network was in a common enough situation: backbone bandwidth was running short and user response time was suffering. A supplier of computing facilities for researchers at several area hospitals, UHN shipped an average of 1 terabyte to 3 terabytes of data per day over a 1G bit/sec backbone connecting its three computing centers. Users – who often sent the same huge file 50 times a day – were reporting that a transfer that typically took 30 minutes to send would take 45 minutes during peak traffic periods, notes Thomas Goldthorpe, director of research information systems. And with traffic continuing to grow, the situation could only get worse.

Goldthorpe's group did its homework and determined that installing BigIron switches from San Jose, Calif.-based Foundry Network Inc. with 10G bit/sec Ethernet boards would meet its expanding bandwidth needs for the next two to three years. And a single 10G Ethernet connection turned out to be a lot cheaper than going with multiple Gigabit Ethernet fiber-optic connections.

Other companies with multi-megabit bandwidth needs are coming to the same conclusion; It seems unlikely at first, given that Gigabit Ethernet boards are starting to drop below $1,000, while 10G boards typically cost $50,000 or more. But equipment costs make up only one piece of the puzzle. Add in other major cost factors such as training, administration and management, user productivity – not to mention the fiber connection itself – and you're likely to come up with a very different ROI scenario.

Examining all the costs

This is particularly true of metropolitan-area networks (MANs), where the largest cost is not equipment, but leasing or deploying fiber between sites.

"If you have dark fiber and want to link data centers or computing centers across a metropolitan area, you might as well do it with a big pipe, since the incremental cost of lighting fiber, Gigabit vs. 10G, is not very much," says Steve Mullaney, vice president of marketing at Gigabit Ethernet switch vendor Force10 Networks Inc. in Milpitas, Calif.

Leasing a fiber-optic connection from a local exchange carrier typically costs $100 to $300 per mile per month. Taking monthly leased fiber costs into consideration, UHN's 10G Ethernet deployment would pay for itself in a year, compared with adding more Gigabit Ethernet boards and leasing individual 1G bit/sec fiber connections, Goldthorpe says.

On a campus backbone, too, companies are likely to find it more cost-effective to deploy a single 10G Ethernet link

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that will meet growing bandwidth needs for the next few years, rather than deploy multiple Gigabit Ethernet connections, according to Duncan Potter, vice president of marketing at Santa Clara, Calif.-based Extreme Networks. "Few companies have a lot of spare fiber-optic pairs lying around," he says.

Then there are the productivity gains to be realized, for both end users and IT managers. The Lawrence Berkeley National Laboratory in Berkeley, Calif., for example, expects to realize major network consolidation paybacks from a 10G Ethernet installation now in progress.

"We've brought the majority of our network equipment into a computing center with high availability power," says Mike Bennett, senior network engineer for the laboratory. The 10G Ethernet backbone will be an aggregation point for desktop computers connected to 100M bit/sec Ethernet links that will eventually be upgraded to Gigabit Ethernet. "Yes, we're an early adopter, but you have to look at intangible benefits – like how long it takes a guy to get back a CAD file he's working on. Speed improvement will improve our people's productivity," Bennett says.

Having most network equipment centrally located will also improve productivity for IT staff because they can fix problems without having to travel, Bennett notes.

It's true that 10G Ethernet is not the only technology that supports multigigabit traffic over a single trunk. "Link aggregation will do the same thing with 1G bit/ sec links, but it's a lot more complicated, less reliable, harder to manage, and takes more resources," Bennett says.

A second alternative, Dense Wave-length Division Multiplexing (DWDM), divides a single fiber pair into multiple optical wavelengths, each able to support a high-speed connection. The major advantage DWDM has over 10G Ethernet is its ability to support a variety of service types on different wavelengths. This makes it a good choice for companies that might want to support storage network technologies like ESCON or Fibre Channel, as well as TCP/IP Ethernet traffic, on the same fiber connection.

For companies that only want to support TCP/IP applications, however, 10G Ethernet represents a far more cost-effective solution than DWDM, which costs $100,000 to $150,000 per device (see chart).

Furthermore, "Using DWDM requires an extra switch at each endpoint," on top of whatever gigabit switch or router feeds into it, notes Ken Cheng, vice president of marketing at Foundry. "That's another set of boxes to manage and another potential point of failure, as well as a source of latency."

Another key advantage of 10G Ethernet over newer technologies such as DWDM – and in the storage sector, Fibre Channel – is that it's an old friend to most IT managers. There is no need to learn a new set of operational parameters or commands, or a new set of management tools.

"We've been able to maintain and manage our network with a very lean staff of 10," Bennett says. He credits 10G Ethernet technology, which enabled IT to centrally manage a consolidated network using familiar IP services such as the Dynamic Host Configuration Protocol (DHCP) and Domain Naming System (DNS), as well as SNMP and its extension Remote MONitoring (RMON).

Comparison shopping

Three alternatives for creating a 10-mile, 10G bit/sec link over leased fiber-optic cable

	10G Ethernet	Gigabit Ethernet	Gigabit Ethernet + DWDM*
Equipment:	$50,000 per board x 2 boards = $100,000	$1,000 per board x 2 boards x 10 connections = $20,000	$1,000 per board x 2 boards x 10 connections = $20,000 $100,000 per DWDM box x 2 boxes = $200,000. Total = $220,000.
Fiber-optic connection:	One line, $200 per mile per month x 10 miles = $2,000 per month	$200 per mile per month x 10 miles x 10 connections = $20,000 per month	$200 per mile per month x 10 miles = $2,000 per month
One-year total:	$124,000	$260,000	$244,000

Numbers are approximate, based on ranges for available products and services.
* Dense Wavelength Division Multiplexing

It pays to compare

Indeed, management and administration is one of the key areas where 10G Ethernet can bring major savings in terms of total cost of ownership. Allocating application traffic across multiple Gigabit Ethernet links involves setting up and maintaining load balancing and Quality of Service (QoS) parameters, which can require major IT time and expertise. In contrast, a single 10G bit/sec connection provides bandwidth to applications on an as-needed basis. Furthermore, the one connection generally provides enough extra bandwidth capacity (at least for a year or two) to preclude the need for QoS management.

If 10G Ethernet looks like a pretty good deal now, the numbers are due to get a whole lot better soon. Vendor support of the soon-to-be-finalized IEEE 802.3ae 10G Ethernet standard will start to bring equipment prices down next year, as will sales growth and possibly downsized components, says Lauri Vickers, manager of the LAN group at market research firm In-Stat/MDR, based in Scottsdale, Ariz. "You can pretty much bet by next year that prices will be down a quarter to a third, and probably that much again in 2004. Remember that the first year, vendors were charging $10,000 for a 1G bit/sec uplink."

Force10's Mullaney agrees. "Within a year or two, you'll hit the magic number where it just becomes for everyone not a why, but a why not."

Elisabeth Horwitt is a freelance technology writer in Waban, Mass. Contact her at ehorwitt@world.std.com.

10 Gigabit Ethernet News

A summary and news update from the 10 Gigabit Ethernet Alliance

The New Standard – a Summary

Essentially it's Ethernet, but faster, and with a wider scope. 10 Gigabit Ethernet is a full duplex, fiber optic implementation designed for point-to-point communication in LAN, MAN and WAN applications.

It scales LAN backbones, aggregates 1GbE, leverages 250 million Ethernet ports, supports local, metro and wide area in one seamless network. It is data rate and format compatible with the installed base of SONET/SDH networks via the 10GbE WAN interfaces. The standard also includes the XAUI architecture for the applications within communications and computer systems.

For more information on the standard, technical details and its implementation visit *www.10GEA.org*.

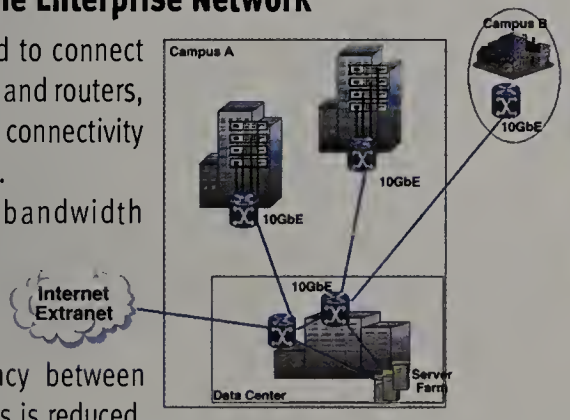
The Principal Benefits

The main purpose of 10GbE is to expand Ethernet's cost model and simplicity to 10 Gbps networking, and extend the reach of Ethernet up to 40km.

10GbE Within the Enterprise Network

10GbE can be used to connect backbone switches and routers, simplifying network connectivity and administration.

In addition, bandwidth capacity for the Enterprise backbone is increased and network latency between switches and routers is reduced.

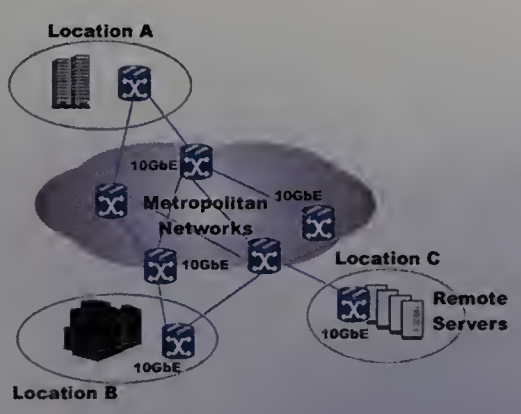


The plug-and-play nature of Ethernet brings reduced administration and operating costs from Gigabit bandwidth workstations, servers and switches, to an upgraded 10GbE Enterprise backbone.

10GbE Applications for Metro Service Providers

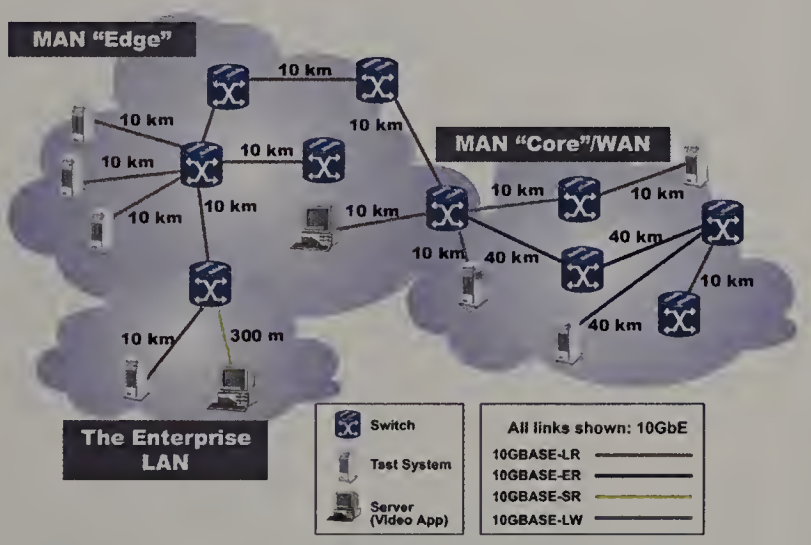
For the first time, an Ethernet standard has been designed for Metro applications as well the Enterprise.

The earliest deployment of 10GbE are being seen in Metro Networks as a natural extension of the thousands of 1GbE Metro networks already deployed world-wide. 10GbE now enables new simple Ethernet services such as dynamic allocation of bandwidth on demand and VLANs to scale to carrier class networks. Following the events of September 2001, corporations are now demanding persistent and dynamic remote backup and recovery of their corporate business information. The new Metro features of 10GbE can effectively offer a solution to effectively store and quickly switch to or recover from a remote data or storage center.



The State-of-the-Art.

The recent Networld+Interop and SuperComm trade shows featured a significant 20 hop interoperability demonstration covering over 200 kms of actual fiber. It demonstrated how equipment from the current 10GbE switch, server and test vendors could be put together in one seamless network.



World's Largest 10 Gigabit Ethernet Interoperability Demonstration

User Deployment

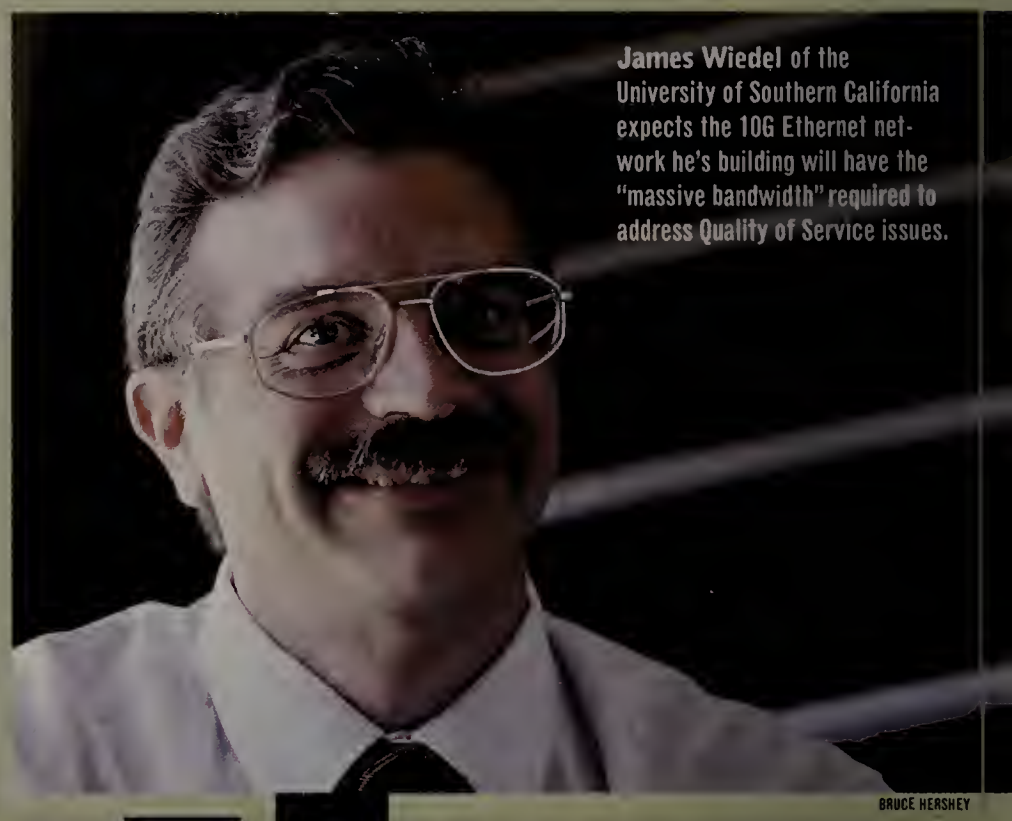
Early user deployment in campus, LAN, MAN and WAN applications are appearing. Suppliers of components, test systems and infrastructure products, are now building on the experience of shipping products that began in 2001.

More Information

Visit *www.10GEA.org* for more information and white papers on topics including: 10GbE Technology Overview, Optical Fiber and 10 GbE, Next Generation WAN Transport, Ethernet as used in Resilient Packet Rings, XAUI: Overview, Introduction to iSCSI, 10GbE Interconnection with WANs.

10GEA
10 Gigabit Ethernet Alliance

The 10 Gigabit Ethernet Alliance (10GEA) was established in order to promote standards-based 10GbE technology and to encourage the use and implementation of 10GbE as a key networking technology for connecting various computing, data and telecommunications devices.



James Wiedel of the University of Southern California expects the 10G Ethernet network he's building will have the "massive bandwidth" required to address Quality of Service issues.

BRUCE HERSHEY

Dispelling common misconceptions about 10G Ethernet

Exploding the Myths

By Steve Ulfelder

As with any new technology, IT and network managers have lots of questions about 10G Ethernet. Most of the questions are reasonable; perhaps a few can be traced to historical misperceptions and imprecise media reports. All deserve answers. We hit up a variety of industry experts to address the most prevalent issues.

Q: Isn't 10G Ethernet really just for carriers?

A: That's been the conventional wisdom to date - but conventional wisdom is often wrong. Ask yourself if there's any reason to expect enterprise demand for bandwidth to slow down. While analysts may disagree about the timing, they agree that 10G Ethernet will find its way into the corporate mainstream. "We see 10G Ethernet evolving first in the enterprise space," says Steve Garrison, director of corporate marketing at Riverstone Networks Inc. in Santa Clara, Calif. "Among previous Ethernet speeds, service provider adoption is usually second."

Q: Is 10G Ethernet mired in the notoriously slow standards process? Does this mean we can look forward to standards wars among vendors, followed by interoperability problems?

A: Ethernet technology is nearly three decades old and has long been woven into the networking fabric. That means 10G Ethernet is not as sensitive to standards as a brand-new technology. Moreover, Ethernet study groups have an excellent track record with the Institute of Electrical and Electronics Engineers (IEEE), having consistently nailed feasible standards.

The IEEE launched the 10G Ethernet study group early in 1999, and formalized it in January 2000 as the 802.3ae Task Force, which has been working on a standard ever since. To increase Ethernet's top speed from 1G to 10G bit/sec, the group addressed two core issues:

- Standards for physical-layer chipsets for local- and wide-area network connections - critical in sending and receiving data signals. The Task Force opted to create two standards: a 10G rate for LANs and a 9.6G rate for SONET OC-192 WANs.
- Distance. To be useful in a WAN, 10G Ethernet needed to span thousands of feet rather than its previous maximum of hundreds. To address this,

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the Task Force is creating standards for both single- and multimode fiber-optic cable. Multimode will work on the LAN and on runs up to 300 meters, but single-mode will be needed for distances greater than 300 meters. The most robust cabling/interface choice – single-mode fiber and optical transceivers equipped with 1,510-nanometer lasers – will reach up to 40 kilometers. "The shorter reach will be of more interest to the data center," says Val Oliva, a director of the 10G Ethernet Alliance (10GEA) and a marketing manager at San Jose, Calif.-based switch maker Foundry Networks Inc.

The 802.3ae Task Force has a reputation for making realistic recommendations that are accepted by the IEEE's Review Committee Standards Board. At press time, the latest 10G Ethernet recommendations were pending with the IEEE board, but were reportedly near approval.

Q: Can I get QoS and traffic-shaping features?

A: Although 10G Ethernet offers a lot of bandwidth to play with, it'll probably be loaded with Voice-over-IP services, which are sensitive to delays, bursty Web data, and legacy applications that have been shoehorned onto the IP network. In such a heterogeneous situation, certain types of traffic can get short shrift without Quality of Service (QoS) – for example, delay-sensitive TCP traffic may lose out.

The good news is that several vendors are rolling out policy-based QoS tools intended to ensure packets are processed as they should be. Santa Clara, Calif.-based Extreme Networks, for example, offers switches that control packet latency in 10/100, Gigabit Ethernet and 10G Ethernet networks. Extreme also targets enterprise needs by controlling the bandwidth consumption of data streams, ensuring that a given stream – such as an enterprise resource planning (ERP) application or an IPX database, which might otherwise be robbed of bandwidth – can always access the pipeline at a specific rate.

There's another way to look at QoS issues, though: "One of the objectives when building a network with massive bandwidth is to have enough so you don't have QoS issues," says James Wiedel, director of network technology at the University of Southern California. The Los Angeles university has parts of its 10G Ethernet network up and running now, and is ramping up quickly. "We are a research university, and it's not even clear how you would apply some of the QoS functionality when random researchers are doing network-based investigations," Wiedel says.

"One of the objectives when building a network with massive bandwidth is to have enough so you don't have QoS issues."
– James Wiedel, director of network technology, University of Southern California

As important as bandwidth management is traffic shaping. Without it, bursty data and Web sessions may tend to starve other applications. Some traffic-shaping tools for 10G Ethernet exist today; others are in the vendor pipeline. These tools let you control the maximum amount of bandwidth any single traffic type may consume; in most vendors' offerings, packets that exceed this limit are buffered, then sent along as other incoming traffic drops. Many analysts say traffic-shaping and bandwidth management tools form a critical part of 10G Ethernet's future. "These are things 10G needs to signal that it's a mature, enterprise-grade technology," says Doug McEuen of Boston-based Pioneer Consulting.

Q: Will 10G be too fast for my security tools to keep up?

A: "Security is on everyone's mind," says USC's Wiedel, echoing many analysts. "Current tools won't really keep up with even a 1G Ethernet link, typically." USC monitors its network at the lower speed ports that feed into its 10G Ethernet links. Wiedel concedes that this means watching many boxes in parallel – "and that means extra work for the security team," he adds. "There are some tricks we use, such as watching router flows and setting up honey pot networks."

Lawrence Orans, a senior analyst with Stamford, Conn.-based Gartner Inc., says firewalls and other security technologies need to evolve to keep pace with 10G Ether-net. Companies such as RapidStream Inc., Cisco Systems Inc. and NetScreen Tech-nologies Inc. have all recently introduced firewall and/or VPN products with throughput of 1G to 2G bit/sec. Competitive pressures, though, will prompt these vendors and others to soon ramp up to 10G Ethernet.

Q: The 10G Ethernet standard is for fiber optics only. What provisions, if any, are being made for copper?

A: Though 10G is indeed fiber-only, Brad Booth – an Intel Corp. marketing manager and a member of the IEEE's 802.3ae Task Force – says there is discussion about running 10G Ethernet over twisted-pair wiring. While this discussion is preliminary, there has been a surprising amount of research around finding ways to run 10G over short runs of copper – exactly what might be needed in an enterprise data center. For example, Marvell Technology Group Ltd., based in Hamilton, Bermuda, has used a transceiver to run 10G Ethernet over 15 meters of standard copper cable. Analysts say research such as this indicates vendors are preparing for a high level of enterprise interest in 10G.

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Short Takes

■ **SuSE Linux AG** has added features to its Linux offering for IBM servers. The update to **SuSE Linux Enterprise Server 7 for IBM eServer iSeries and pSeries systems** includes expanded hardware support, new drivers, security fixes and patches, the company said last week. The hardware support will let IBM's most recent pSeries servers be partitioned into logical systems so that users can consolidate multiple applications on a single high-performance server. An Open Database Connectivity driver for Linux lets users access DB2 Universal Database for OS/400 from Linux applications. The updates can be obtained through the SuSE Web site or on CD. **www.ibm.com; www.suse.com**

■ **MiLAN** last week announced the **MIL-S3580,** a 24-port 10/100M bit/sec managed Layer 2 switch that includes the ability to regulate bandwidth on a per-port basis, according to the company. The MIL-S3580 can control traffic on a port or virtual LAN segment at eight "levels" or speeds between 10M and 100M bit/sec per connection. Port speeds can be adjusted for ingress and egress network traffic. The switch also has two Gigabit Interface Converter slots for inserting 1000Base-T, -SX or -LX GBIC uplinks, or Fast Ethernet GBICs. The box supports management technologies such as SNMP, Remote Monitoring and port mirroring, virtual LANs with 802.1Q and quality of service with 802.1p traffic prioritization. The MIL-S3580 is available for $1,190. **www.milan.com**

IP storage down . . . but not out

■ BY DENI CONNOR

It sounds like a good idea. Technology that makes it possible to build less expensive, native IP-based storage networks and mixed Fibre Channel-to-IP storage-area networks.

But in practice, network executives are adopting IP storage (iSCSI) at a slow pace. Analysts say that the users who are interested in deploying iSCSI, which uses TCP/IP to transport block-level data over Gigabit Ethernet, are deterred by:

- The lack of native array support from EMC, Hitachi, IBM or Hewlett-Packard.
- An industry that is risk-adverse to any new technology because of the economy.
- Interoperability concerns caused by TCP Offload Engines (TOE).
- Concerns that iSCSI could be replaced by other faster, less-expensive technologies such as 10G Ethernet or InfiniBand.

"I don't think there has been any [iSCSI] adoption," says Tony Prigmore, senior analyst with Enterprise Storage Group. "IBM, for instance, pulled the plug on the only iSCSI array in the business, so at this point there is very little iSCSI installed."

While users say iSCSI is attractive because it should be able to be installed and configured like Gigabit Ethernet and is less expensive than the more complex Fibre Channel, they have concerns.

"My company is in watch mode with iSCSI," says John Blackman, system architect for Emerging Technologies & Consulting at Wells Fargo in Minneapolis. "With iSCSI, we are concerned with not only the fact that no major storage vendor has iSCSI storage arrays, but with routing issues, pricing and performance."

IP storage products

A variety of storage vendors have plans for iSCSI products. Here's a sampling:

Company	Product	Type of product
3Ware	Palisade IP Storage Array	Target array
Adaptec	ASA-7211 iSCSI Adapter	Host adapter
Alacritech	100x1 Server and Storage Accelerator, 100x4 Quad-Port Server Accelerator	Host adapter
Cisco	SN 5420, SN 5428	Router/switch
IBM	TotalStorage IP Storage 200i	Target array
Nexsan	Veriture IP	Router/switch
Nishan Systems	IPS 3000 and 4000	Router/switch
Pirus Networks	PSX-1000	Host adapter/silicon
Qlogic	SANblade 4000 series	Router/switch
SAN Valley	SL-1000 IP-SAN Gateway	Router/switch
SANCastle	GFS-8 and GFS-2	Router/switch

Blackman says the SCSI Remote Protocol (SRP) over InfiniBand could replace iSCSI and do it less expensively and with better performance.

"I don't know what the life of iSCSI will be — part of it is because iSCSI needs a dedicated Ethernet network," he says. "If I look at my servers, I have dual adapters for my data network, one adapter for management and another adapter for iSCSI. If I want fail-over or load-balancing [capability for iSCSI], I need to add another adapter. Plus, if SRP over InfiniBand at 30G bit/sec is available in 2003, I don't know what the impact of iSCSI will be."

Analysts recommend that users should wait to adopt iSCSI until more large storage vendors offer products.

"A lot of customers that would deploy

See iSCSI, page 18

NetScreen refreshes VPN product line

Company looks to improve speed, reliability of remote site gear.

■ BY TIM GREENE

NetScreen Technologies this week is introducing technology designed to make running VPNs more attractive at small sites and more reliable at any site.

The company's latest product, the NetScreen-5XT, blends the functions of a VPN gateway and a four-port Ethernet switch, letting multiple devices be connected to it.

Wellmont Health Systems in Kingsport, Tenn., plans to supplement its five-site, NetScreen-based VPN with 5XT, according to Darren Ramsey, a senior network specialist at the healthcare provider. He says the new devices are suited to use in remote offices where doctors need to view electronic versions of X-rays and where a T-1 line costs too much. He also plans to install one at his home to connect to the network after-hours.

At $700, the device supports 10 users and 10 VPN tunnels. A version called 5XT Elite supports unlimited users and 10 tunnels. Both process VPN traffic at up to 20M bit/sec and include a 70M bit/sec firewall. Another feature is that if a DSL, cable modem or other primary dedicated link fails, the device dials for an Internet connection.

NetScreen also is introducing software that brings the company's equipment more in line with its competitors' by adding management features and extending the ability to cluster the devices to smaller appliances in the product line, says Jim Slaby, senior industry analyst for Giga Information Group.

"Nortel, Cisco and Check Point [Software] all have a pretty good story about central-site management tools. NetScreen's core strength is ASICs, and the software takes longer to develop. They're trying to be more than just faster and cheaper," he says.

Version 4.0 of its ScreenOS operating system extends the ability to pair gateways so if they both are working, they share the load. If one fails, another takes over for it. Previously this feature was available only on NetScreen's high-end 500 and 1000 gateways, but is now available on the 100 and 200 models.

A different capability, to pair machines and have one standing by but not load-sharing, also has been extended to a lower-end device, the NetScreen 50. Previously, it was available with NetScreen 100, 204, 208,

See VPNs, page 18

WIRED WINDOWS

Dave Kearns

I'm from Microsoft, and I'm here to help you

"Palladium . . . will give individuals and groups of users greater data security, personal privacy and system integrity."

— John Manferdelli, Microsoft general manager

Microsoft recently announced its Palladium initiative, which will provide features in the Windows operating system tied to features of the computer's chipset to establish identity-based management of the PC. Not surprisingly, this was announced to *Newsweek* rather than to the technology press. I say not surprisingly because this system is even less user-friendly than the Intel idea to embed identification numbers in CPUs that was shot down three years ago, and the general press is less equipped to ask the tough questions about new technologies.

Microsoft is touting the new technology as a stepping stone to digital rights management, but it's more than that. Not only would copyright holders (especially music and video copyright holders) obtain a way to control licensing of material, but the producer and users of any content would be able to be tracked — it would be relatively easy to find out who wrote which e-mail and who read or viewed each document. Anonymity would definitely be a thing of the past.

■ **Read other columnists' views on Palladium. Scott Bradner, Page 21. Mark Gibbs, Page 54.**

But Manferdelli, the general manager for the project, wants you to think that this is a boon to users — increasing their security and privacy. That's hogwash, or worse.

Privacy is not enhanced when everything you type at the keyboard can be traced back to you. And as for security, that promise quickly is proving to be illusory.

Microsoft's competitors, quite rightly, are wailing that this smacks of yet another monopolistic practice. They say it would be easy to build into this architecture "security" checks that only Microsoft (or Microsoft-licensed) applications could pass. To allay these fears, Microsoft is considering publishing the source code to Palladium.

While publishing the source code might assuage Microsoft's competitors, it would be a boon to the crackers who want to find a way to evade the security system. The locks on your door and an alarm system aren't much help against a burglar armed with the system's blueprints!

There needs to be better security for our computers — but the bulk of the security problems are caused by Microsoft applications, not by the operating system. Fix the flaws in the apps, Redmond, then try to develop security conscious apps. Security is important, but not important enough to give up all of my privacy.

Kearns, a former network administrator, is a freelance writer and consultant in Silicon Valley. He can be reached at wired@vquill.com.

Tip of the Week

You can read more of Manferdelli's remarks about **Palladium** at www.nwfusion.com, DocFinder: 1229 — but take them with a large grain of salt! This is, after all, a Microsoft-orchestrated Q&A.

iSCSI

continued from page 17

iSCSI are waiting until 2003 for second-generation products and for more robust support from the storage vendors," says Jamie Gruener, an analyst with The Yankee Group.

"If you look at the large storage vendors other than IBM, most of them have been pretty quiet so far. That's going to change in the second half of this year," Greuner adds.

Hitachi has said that it will support iSCSI in its Freedom Lightning 9900 array; HP is expected to make IP storage announcements later this year; and EMC has only said it will introduce iSCSI products when standards are available.

Further, Gruener predicts that a number of vendors are going to fail or never deliver products.

"There are going to be a number of failures because the market of volume [or demand] won't be there for the next couple of years," Gruener says. "There are so many companies vying for so little customer adoption in the short term."

Some failures

Already, several companies have failed to get off the ground or decided to get out of the iSCSI business.

Two iSCSI start-ups, Entrada and NetConvergence, have shuttered their doors and 3Ware, the first company with an iSCSI array, recently reorganized its business around disk controllers.

IBM's venture with the TotalStorage IP Storage 200i has been uneventful. Even though IBM insists that it is still actively selling the TotalStorage IP Storage 200i, numerous calls to the company's online e-business site, IBM Direct, indicated that the product is at best hard to come by.

Gruener says another issue hampering iSCSI sales is the current economic malaise.

"All emerging technologies are facing the same general problems of customers are really cautious about deploying new technology in this economic downturn," Gruener says. "They are risk-averse."

Withstanding these disadvantages, present iSCSI adapters, called TOEs because they off-load the TCP/IP stack onto silicon on the card, suffer from routing problems. In off-loading TCP/IP from the operating system where it typically runs, the iSCSI adapter can't be used to handle alternate paths or load balancing with Gigabit Ethernet adapters co-residing in a server. They also can't be assigned to the same Windows NT domain as the Gigabit Ethernet adapter, where they can be managed more easily.

Vendors such as Intel and Adaptec, which are shipping off-loaded TCP/IP iSCSI adapters, say they will fix the problem before year-end. Alacritech, which shuttles the TCP portion of the stack between the operating system and the card, does not see the problems with routing the other adapters do.

ISCSI performance issues raise another flag for users. The technology, which is intended to give gigabit speeds, suffers in some implementations. Intel's Pro/1000 T IP Storage Adapter performs at 300M to 700M bit/sec, according to Intel, much less than that of 2G bit/sec Fibre Channel, 10G Ethernet or InfiniBand adapters. Adaptec and Alacritech say their adapters operate at wire speed.

Cisco, which markets the SN 5420 router and SN 5428 switch, says performance is not an issue for its products because they will be used outside the data center in mid-size businesses or departments and branch offices in the corporation, where performance is not that crucial. Nishan Systems recently demonstrated wire speed performance with its IPS 3000.

Another issue that could affect user iSCSI adoption is the current lack of standards for the emerging protocol.

Standards not a concern

"For our implementation, standards weren't much of a concern," says Dave Mucha, Webmaster for construction machinery company Komatsu America International in Mundelein, Ill.

"The way Cisco has it set up is if something changes we just download another version of the software," Mucha says. "It takes only minutes to upgrade. The hardware stays the same."

He uses two redundant Cisco 5420 routers to attach his Web servers to IBM Enterprise Storage Servers.

With iSCSI, updates to the current release of the specification occur in software, requiring only a download of new programs.

A range of draft specifications for iSCSI management, naming, security and the protocol have been submitted to the Internet Engineering Task Force and are pending standardization. Among the drafts in "last call" status — one of the last steps before standardization — are the IP Storage Security, Storage Name Service and the iSCSI protocol specification.

A source close to the standards process said the iSCSI specification should be set by fall.

Despite the negativity, Gartner predicts the market for iSCSI adapters will increase from $590 million this year to $1.22 billion in 2005. IDC says the total iSCSI market will be double that figure or $2.48 billion in 2005, almost a sixfold increase in compound annual growth. ■

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VPNs

continued from page 17

500 and 1000.

Ramsey says this high-availability option is important to Wellmont because some affiliated laboratories must have reliable connections to it.

"If my [gateway] fails and I don't have redundancy, billing and testing are going to stop," he says.

NetScreen is upgrading its Global Pro management platform with a historical reporting tool and the ability to write reports on types of traffic the devices handle.

The company is integrating a Sygate Personal Firewall SE 5.0 with a VPN PC client from SafeNet that it already supports.

Separately, Cylink is introducing NetHawk 5.0, a software upgrade to its NetHawk VPN gateway that is the first overhaul of the device in a year and a half.

The software supports failover, so up to four NetHawks can be clustered with one acting as the primary device processing packets. It also sends packets out into the WAN without fragmenting them. It includes software configuration tools that make it simpler to set up support for virtual LAN traffic across a VPN.

Cylink also is announcing agreements with Certicom and SafeNet to support their VPN client software for handheld devices and PCs, respectively. Certicom's software supports Palm and Pocket PC 2002 devices and costs between $11 and $30 per seat, depending on number of seats. Currently SafeNet's PC client is free with a NetHawk gateway, but Cylink plans to start charging an as-yet-unspecified amount for it in the fourth quarter. ■

VPNs

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Portals power business user profits

■ BY JENNIFER MEARS

Halliburton, which provides products and services to petroleum and energy companies, knows what information overload is. The company has thousands of documents — technical papers, best practices outlines and product descriptions — that it uses to service customers, including Exxon Mobil, Chevron and Conoco. Until last fall it was doing things the old-fashioned way, faxing brochures and other information to customers.

But sometimes information wasn't getting to the right place, and it took employees too much time to find what they needed.

So last fall, Halliburton, based in Houston, decided to deploy a portal to better manage its flood of information. It found that the portal, which hooks into legacy systems such as SAP, did even more than manage information — it let Halliburton better service its customers and made it easier for employees to do their jobs.

The portal has led to more than $10 million in sales and created about $280,000 in internal cost savings since the company started tracking the portal in February, says Brandon Lackey, program manager at Halliburton.

He says the myHalliburton.com portal, powered by Plumtree, has increased sales by making products and information easier to find for customers. A recent survey found that 40% of customers said the portal influenced their purchase decisions, Lackey says. Internally, the portal has made information easier to find for employees, giving them access to invoices, customer proposals and work schedules in one place.

"I don't think we anticipated how much value the portal could deliver."

Brandon Lackey
Program manager, Halliburton

"We really anticipated it primarily as a knowledge portal, sharing technical content," Lackey says. "I don't think we anticipated how much value it could deliver in terms of other things."

Halliburton is not alone. In growing numbers, businesses are finding that portals can lead to tangible business benefits if they are used to solve specific business problems. Companies are deploying portals to streamline internal processes and reduce — even eliminate — paperwork, give geographically dispersed employees a place to collaborate, and provide customers, partners and suppliers with a centralized resource for conducting business.

Hewlett-Packard, based in Palo Alto, Calif., implemented a portal to focus its human resources department on more strategic assignments. The company was able to close an HR call center and says that a $20 million investment in its employee-focused Epicentric portal resulted in about $50 million in savings in the first year.

Whirlpool, in Benton Harbor, Mich., cut order-processing costs by 80% last year thanks to its business-to-business portal that is based on IBM technology. Because the portal lets orders be processed automatically, Whirlpool says it has been able to grow its sales from $7 billion to $10 billion without having to add staff to process additional orders.

Toshiba America Information Systems in Irvine, Calif., launched a BroadVision portal in October 2000 to provide an online storefront for its customers and estimates that it has resulted in $110 million in cost savings and incremental sales during the past 18 months.

A recent study by Delphi Group found that companies experienced a four- to sevenfold return on their portal investment by the end of three years. For the most part, though, those companies targeted specific uses for the portal before deploying it, rather than launching a massive, costly initiative for the entire business, says John Hughes, a senior analyst at Delphi Group.

"A majority of the portals were smaller departmental point solutions for specific problems," he says. "And then once that portal succeeded, companies decided to expand it out to different groups."

Frank Hood, CIO at Krispy Kreme, in Winston-Salem, N.C., talks glowingly about his company's CoreChange portal, which connects employees with the applications they need, along with linking franchise stores with the home office, eliminating paperwork, postage and headaches. But he agrees that companies need to be cautious about how they launch their portals.

"I would suggest that you not engage in a product that requires a six-month or one-year implementation period," he says. "If you've got strong Web content or solutions that leverage the Web, then wrap the portal around those."

He says what has made the Krispy Kreme portal such a success — it's accessed thousands of times per day by more than 500 employees and a majority of the 220 Krispy Kreme doughnut stores around the country — is that he was able to get it up and running quickly and then add features as necessary.

See Portals, page 21

Short Takes

■ **Precise Software Solutions** last week released **Precise/Indepth for Microsoft SQL Server 2000.** The software, which has been available for IBM and Oracle databases, detects and resolves performance degradation of applications that run on a database, such as enterprise resource planning. Precise/Indepth captures, measures and correlates performance metrics from all critical system components. It also features Performance Warehouse, which allows for historical analysis of usage patterns and performance trends. The high-speed sampling engine in Precise/Indepth was developed jointly by Precise and Microsoft. The software is available now. Pricing was not announced.
www.precisesoft.com

Microsoft controls content

■ BY JOHN FONTANA

REDMOND, WASH. — Microsoft this fall will release a revamped version of its Content Management Server that lets network executives more closely integrate the Web site publishing tool with Microsoft Office and the company's .Net line of servers.

Content Management Server (CMS) 2002 also will get integration hooks into Visual Studio.Net, Microsoft's development environment for creating Web services.

CMS lets users create content, enter it into a workflow process and have it published on a Web site, all without IT intervention. This is the first version of the server Microsoft has developed since purchasing the technology from NCompass Labs last year and hastily renaming and releasing it to plug a hole in its software lineup.

Now Microsoft is adding the ability to author content in Microsoft Word and automatically enter it into a CMS workflow process. Previously users had to cut and paste Word content into a template. Microsoft also has added support for XML content; previously the server only produced HTML content.

"Ironically, Microsoft did not have a link to Word, so they have solved that problem with the authoring tools," says Nick Wilkoff, an analyst with Forrester Research. "This is the first opportunity for Microsoft to enhance the server, and although it still falls short in areas such as workflow, any company with an investment in the Microsoft platform will find this server is adequate."

CMS competes with Interwoven, Vignette and Documentum, all of which represent the high end of Web content management.

Microsoft is fighting to climb the food chain by adding options for manual, scheduled or automatic deployment of content. Microsoft also has added delegated administration controls.

CMS 2002 adds native support for Web services. For example, a CMS workflow for submitting documents for publication to a Web site could be offered as a Web service and integrated into any XML-based Web services application. The server also is integrated with Visual Studio.Net by providing developers with a set of controls for adding content to CMS, including XML, images and video.

The first beta version of CMS is now available. Microsoft plans only one beta-test cycle before releasing the software in the fall. Pricing is $4,300 per CPU. ■

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'NET INSIDER
Scott Bradner

Not quite Independence Day

The editions of this magazine and *Newsweek* that came out closest to July 4 each had articles about the recently divulged Microsoft Palladium project to secure computer systems and intellectual property rights. But neither article spent much time exploring another aspect of the proposal: the user's ability to control his own computing environment.

For those with short memories, or who did not read either of those articles, Palladium is Microsoft's project to implement the Trusted Computing Platform Alliance's trusted computing architecture. The aim of the project is to develop a hardware/software combination that can be used to identify the user of a computer and give the user control over what software gets run on the machine and over who can read or forward material the user creates or transmits. The latter feature can be used by copyright holders to control distribution of their material. But Palladium is a tool and, like many tools, could be turned into a weapon. And not just a weapon against copyright violations.

In the era of Internet dependence and rampant vulnerability of the computers on the Internet, something needs to be done to protect us against viruses, invasions of privacy, the information on our machines and maybe even spam. It has been said Palladium-equipped systems will do all of that plus protect Disney if someone wants to run off with a copy of "The Little Mermaid." So why do I worry?

For one thing, to deliver on these promises Palladium implementations will have to be bug-free. "Bug-free" and Microsoft are not often associated concepts. But a bigger worry is that Palladium could be too good at what it's designed to do. Microsoft could use Palladium to control what software could run on your computer, a government could use it to control what you could see on the Internet, or a PC vendor could make it impossible for you to sell your used computer. People could send e-mail that only the intended recipient could read, a neat feature if you are Bill Gates about to be hauled into court, but not so good if you want to prove that someone is harassing you. Not exactly Independence Day concepts.

I might be a bit less worried about these scenarios if the Microsoft Media Player update that came out about the same time as these articles did not require the user to agree to let Microsoft "automatically" (such as without your knowledge or permission) update software on your computer, not limited to Media Player. This could keep you from using software Microsoft does not approve of on your computer.

Palladium will be a success if it is widely adopted and that will require people to trust it and the organizations that will be able to control it. With the Media Player update, Microsoft has shown again that trust will not come easily.

Disclaimer: Ask our neighbors — trust in Harvard improves with distance. But the university has not expressed an opinion on this topic.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Portals

continued from page 19

"Don't pick a solution that's going to take a tremendous amount of time to develop up front. Look what you're trying to accomplish," he says. "Have short-term deliverables so that people don't lose interest prior to the next deliverable being launched."

Whirlpool took a slow approach to its portal, rolling it out first to partners and then launching a portal in phases for employees. Whirlpool, which has had its business-to-business portal for about three years, began its employee-facing effort about six months ago.

"The first wave [of the employee portal] included Whirlpool news, e-mail, calendaring, team rooms for collaboration, corporate communications and outside news feeds," says Jim Haney, vice president of architecture and planning at Whirlpool. "The next wave will involve more transactions."

Dave McDonald, CIO at Toshiba America Information Systems, says he's also looking at launching an employee portal after seeing the benefits of his company's customer-facing site. With the customer site, Toshiba reduced the number of calls to tech support because it could put its customer support information on the Web. That accounted for a large part of the savings.

McDonald expects those types of savings will translate to the employee side when functions such as human resources administration is turned into a self-service feature for employees.

That's exactly where HP found big benefits from its employee portal.

"Lots of the savings came from the fact that I was able to eliminate the call center, the 800-number employees call," says Homer Wong, formerly HP's director of business development for business-to-employee solutions (now Siebel global alliance manager).

In addition, with the portal, Wong and his team consolidated hundreds of disparate Web sites, reducing the need to manage multiple sites.

Consulting company Perficient of Austin, Texas, found a big chunk of savings from its IBM WebSphere portal because of its collaboration capabilities. The company has consultants across the country and in Europe. In the past, consultants would have to gather in a central location before heading out to work with a client, says Andy Sweet, Perficient's CTO.

"Once we started to use these collaboration tools, we saw a dramatic reduction in travel," Sweet says. "We also used to do classroom training. Now we do weekly Webcasts."

Sweet says the company trimmed its travel budget by about 30% in the first quarter thanks to the portal. ■

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No end in sight for frame networks

Equipped with new bells and whistles, a 10-year-old technology soldiers on.

■ BY MICHAEL MARTIN

Special Focus

■ **FRAME RELAY:** Going strong at age 10.

Frame relay is a decade old — which in the fast-paced IT world is more like being 100 than 10 — yet no one calls the venerable technology obsolete. Frame relay's stability, adaptability and evolving pricing will allow it to remain a premier WAN technology well into the future, customers and industry analysts say.

Numbers support those opinions. According to research by consulting firm Vertical Systems Group, there were 1.78 million frame ports in use worldwide last year. What's more, Vertical forecasts that frame relay revenue in the U.S. will continue to climb, increasing from $6.6 billion in 2000 to $11.9 billion by 2004.

Outside the U.S., frame is expected to grow faster. Vertical is forecasting $9.1 billion in revenue in 2004, up from $4.1 billion in 2000.

Much of frame relay's continuing appeal is that it is a mature technology. "The major reason it's still going is that it works well and it's well-defined in what it does and doesn't do," says Steven Taylor, president of consultancy Distributed Networking Associates and a *Network World* columnist.

Large businesses would need a compelling reason to justify the implementation of a new technology given the time and money such users have invested in building out their frame relay networks. And right now, there's no successor on the horizon.

Assessing alternatives

IP VPN often is cited as the technology most likely to replace frame relay. But, Taylor says, many IP VPN services actually rely on frame relay as their underlying transport. If these services are being marketed to established frame users, they're often described as frame relay services, he says. If the services are being pitched to new users, they might be marketed as IP VPN offerings.

The technologies that could challenge frame relay directly are DSL and cable connections, which offer speeds that generally are higher than frame relay, at lower costs.

The catch is that neither technology is widely available to business users, and where it is available, the service-level agreements (SLA) aren't as good as what frame users are accustomed to, Taylor says.

Reliability is why Pacor, a manufacturer of insulation products in New Jersey, decided to go with frame relay instead of DSL when the company needed to upgrade dial-up modems at its six locations.

Pacor's bandwidth needs had increased to where the dial modems couldn't handle the scheduling and shipping information running between the company's headquarters and its other locations, says Jim Brown, Pacor's executive vice president for IT.

Pacor opted to go with WorldCom's Bundled Frame Relay offering for a combination of 128K and 256K bit/sec lines. By going with the bundle, Pacor saved money compared with WorldCom's regular frame relay pricing. The package still wasn't as inexpensive as DSL would have been, Brown says, but he felt that DSL presented more risks than frame relay.

"We weren't sure if it was as reliable, and it sounded like there might be some security issues," he says. "We wanted to go with something that was tried and true."

Frame relay may be 10 years old, but the technology hasn't stood still. A number of recent enhancements have made frame relay more flexible for companies that have changing IT needs.

The most significant change to frame relay might be the IP-enabled frame relay services that major carriers such

See Frame, page 24

Keeping frame fresh

Some enhancements to frame relay that have kept users interested in the technology include:

- **Frame relay to ATM internetworking:** Lets users combine frame and ATM connections in one network. A typical example would have a headquarters using a high-bandwidth ATM link with branch offices using lower-speed frame links.
- **Multilink frame relay:** Lets users bond multiple T-1 lines to get high-speed frame connections at busy sites.
- **IP over frame:** A company subscribing to an IP frame service can set up many-to-many connections at its sites, rather than relying on traditional point-to-point frame connections.
- **DSL to frame:** Gives customers an access line with a better price than a dedicated circuit, but the service guarantees on DSL aren't as high.

Cable & Wireless debuts MPLS-based IP VPN

■ BY JENNIFER MEARS

VIENNA, VA. — Cable & Wireless this week will announce the availability of an IP VPN service that lets customers prioritize traffic as they move to converged networks that support voice, data and video.

Called IP-VPN QoS, the service uses Multi-protocol Label Switching (MPLS) to designate packets for preferred delivery over an IP network. C&W has talked about MPLS services since late last year and in April announced a partnership with Cisco to build and co-market a private network that will support MPLS and run parallel to C&W's existing public IP routes.

Initially, the network will include 21 nodes in the U.S., Europe and Japan. A typical node includes two Cisco 12000

See C&W, page 24

Short Takes

■ The U.S. Attorney's office in Denver notified **Qwest** last week that the office has begun a **criminal investigation** of the company. Details of the investigation were not available at press time. Qwest already is under investigation by the Securities and Exchange Commission for possible accounting missteps, and credit agencies have downgraded the carrier's bonds to junk status. **www.qwest.com**

■ **Nokia** and **IBM** last week announced a licensing deal and an agreement to collaborate in the development of software for the secure delivery of digital content over wireless networks. Under the licensing deal, IBM will resell Nokia's delivery server, together with IBM content management and protection products as part of IBM's **Media Factory** framework, the companies said. The framework is based on a number of IBM core products, such as the **Electronic Media Management System** digital distribution suite and the WebSphere application server, which help companies create, store, manage and distribute digital content. IBM's content management and protection products let mobile service providers offer services, such as Java-based games, digital images and polyphonic ring tones.

EYE ON THE CARRIERS

Johna Till Johnson

An action plan for IT consolidation

One of the biggest trends for companies over the past year is IT consolidation. In other words, IT functionality is being consolidated once again into a single corporate department, rather than distributed across multiple lines of business.

It's a function of the economy. In boom times — such as 1997 to 2001 — CEOs buy into the idea that lines of business can manage IT services more effectively and efficiently on their own, rather than depending on hidebound corporate IT departments. Thus, in good years, each line of business operates its own autonomous or semiautonomous IT department.

But when the economy slows, corporate IT pulls ahead. CIOs argue that the only way they can control costs is by regaining control of IT. That means network directors end up inheriting a hodgepodge environment from which they're expected to carve 20%, 30% or even 40% of operating costs, while maintaining or improving service quality.

If this is hitting close to home, don't panic. What follows is a checklist of action items you can use to ensure that both your CFO and your users stay happy:

Step 1: Review all telecom contracts, no matter how recently signed. Be sure to include voice, video and wireless services as well as data contracts. In addition to basics such as pricing, terms and conditions, and duration, look specifically at service-level agreements and "out" clauses — scenarios under which you can exit the contracts without penalty. Look for anomalies that can be exploited (one of our customers discovered that its land-line long-distance per-minute charges exceeded its mobile per-minute charges, meaning that encouraging everyone to use cell phones saved money). If you're lucky, your legal or procurement department has included merger-acquisition-divestiture clauses that let you exit the contract in case of a change in the service provider's financial circumstances, which can be useful when your carrier goes belly-up.

Step 2: Review the architecture of your voice, video and data networks. This lets you benchmark the existing parameters of the system before making changes. Check for quality-of-service capabilities, peak and average capacities, and number of hops. Don't neglect the type and number of PBXs, and voice mail capabilities.

Step 3: Benchmark, to the greatest extent possible, the user experience as it relates to networked applications and services. Are users happy with the response times of their critical apps? Why or why not?

Step 4: Review with corporate application developers (and purchasers) the plans for new application rollouts for the next five years. Keep in mind requirements for voice and video and more traditional applications. The more you know about how the network will be used, the better you're able to plan.

Step 5: Based on all the information above, prepare a strategic plan. Ideally, this will include a new request for proposal (or multiple requests for proposal) for new services and an updated architecture, with improved SLAs and "out" clauses.

Johnson is senior vice president and CTO for Greenwich Technology Partners, a network consulting and engineering firm. She can be reached at johna@greenwichtech.com.

C&W

continued from page 23

routers, a Catalyst 6500 router and several Cisco 7500 routers. Cisco 10000 routers are deployed at customer sites. More nodes will be added to meet customer demand, the company says.

The network also uses the IETF's RFC 2547 specification, which dictates how customer traffic is moved across MPLS-based VPNs.

IP-VPN QoS will be available in 61 countries with service connectivity in more than 450 cities. It is designed for large multinational corporations with high-performance needs, primarily those moving to converged networks, a C&W spokesman says.

It offers class-of-service options that let customers prioritize critical traffic such as video or financial data over noncritical traffic such as e-mail. The three classes of service are Standard, for noncritical traffic; Enhanced, for business-critical traffic such as financial transactions; and Premium, for content such as voice and video.

Most major carriers offer MPLS-based VPN services, which promise dramatic cost reductions compared with frame relay. However, the technology is not mature and businesses for the most part are reluctant to adopt it. Competitors such as Equant, Infonet, AT&T and WorldCom offer MPLS networks, "but most enterprise users are not ready," says Brownlee Thomas, a senior analyst with Giga Information Group.

"If you look at [MPLS], it is really very early," she says. "But it's something we expect to mature a lot faster than frame relay did."

As companies focus on converged networks, especially voice over IP, MPLS services will become increasingly important, Thomas says.

"The carriers have awakened to the fact that businesses want to hear about MPLS," she says. "It's next-generation frame relay."

C&W already offers IP-VPN QoS in the U.K., where H.J. Heinz uses the service to connect its fully managed VoIP telephony and IP-LAN.

IP-VPN QoS is a fully managed service and provides customers with a reporting system that offers performance details such as packet throughput, packet loss, latency, jitter, router health and service availability. It is backed by service-level agreements that cover availability, latency, packet loss and jitter performance for each class of service. ■

"If you look at [MPLS], it is really very early. But it's something we expect to mature a lot faster than frame relay did."

Brownlee Thomas
Senior analyst, Giga Information Group

Moving to MPLS

Cable & Wireless is partnering with Cisco to offer an MPLS IP-VPN service that includes network analysis, provisioning of routers and other equipment, VPN configuration and maintenance. Pricing consists of three main components:

- **Per-month or annual site-connection charge.** Either way, the charge applies to each site and includes the installation of the access circuit and customer edge router.
- **Annual site rental charge.** There is an annual charge per managed site, the cost of which depends on the bandwidth of the access link and the type of customer edge router.
- **QoS charges.** For bandwidth for the Enhanced and Premium classes of service; no charge for standard quality of service or for traffic from unmanaged or off-net sites.

Frame

continued from page 23

as AT&T, WorldCom and Sprint are offering.

IP-enabled frame costs more than a traditional frame connection. But it lets companies that have sites needing to communicate with more than one other site handle all their communications over one frame line. In the past, companies had to set up a separate point-to-point frame circuit for each site with which a location it needed to communicate.

The pricing on IP frame services is low enough that it's usually worthwhile for a location that needs to communicate with more than one other site to set up an IP-enabled frame link, Taylor says.

Recent improvements

Frame relay to ATM internetworking, also offered by major carriers, is another feature that's helped frame relay maintain its market share. If a company's corporate headquarters outgrows its frame relay connection, it can upgrade to ATM and continue to have its branch sites served through frame relay. Internetworking between the technologies is handled by the carrier within the network and is transparent to the user.

Another recent enhancement, multilink frame relay, also is designed to help users who have outgrown 1.5M bit/sec frame relay connections. By bonding multiple T-1 lines, multilink frame relay lets users get larger connections that still act as a logical, frame relay line.

The most recent frame variation, and one that isn't yet widely available, is DSL-to-frame service.

AT&T and WorldCom currently offers DSL to frame in several markets in areas where DSL is available. The service lets companies connect some of their sites back into a corporate frame network through DSL, saving the companies money.

WAN technologies have become so mixed that it's now difficult to tell whether a service is being offered over IP, frame, ATM or a combination of the three, Taylor says.

Ultimately, Taylor says, users won't care as much about the technology underlying a service as they will about SLAs and pricing. Which means that as long as frame relay can continue to offer stable service at reasonable prices, it could be around for another 10 years. ■

More online!

See why one communications company chose frame relay to connect 65 TV stations.

DocFinder: 1231

The Edge

■ SERVICE PROVIDER DEVELOPMENTS AT THE JUNCTURE BETWEEN THE ENTERPRISE AND THE NEW PUBLIC NETWORK

Verizon moves voice with packets

Parts of New Jersey and Florida networks have gone ATM.

■ BY TIM GREENE

In what will likely be a long migration to an undetermined destination, Verizon has started using packet switches to carry customer voice traffic in two metropolitan areas.

The use of ATM switching has begun in West Orange, N.J., and Tampa, Fla., where the technology could lead to advanced services, but for now represents a way to lower long-term network costs. While the price of the packet gear is comparable to circuit switches, the packet switches use bandwidth more efficiently and require less management.

"This saves money over the long run by reducing network operating costs, using larger interoffice trunks and by using dynamic provisioning," says Phil Harrington, Verizon's voice trunking-over-ATM project manager.

While Verizon is certain it wants packet switching to anchor its networks, the exact technology and the pace of deployment are still unknown.

"This is probably the first time in 30 years that we are going to next-generation switching," Harrington says.

Injecting packet gear for Class 4 tandem switching is just the start, with the goal to eventually use Class 5 packet switches for connecting to customers. This will open up the opportunity to sell new, mixed-media services that combine voice, data and video, he says.

"This is a growth vehicle. We'll migrate all our traffic to it over time," Harrington says.

For now, Verizon is content to use ATM as the packet technology, but that could change. IP is an alternative that Verizon may use later, but for now IP quality of service (QoS) and circuit management are still immature; ATM offers the QoS guarantees Verizon needs and circuit management features, Harrington says.

The packet-switched, voice-trunking-over-ATM application is intended to make call setup more efficient and ease integration of voice, data and video traffic into new services, such as combination voice and text messaging. Verizon and other established local carriers predominantly use circuit switches that set up physical circuits between callers and the parties they are calling.

Packet switches — in this case Nortel ATM equipment — use virtual circuits to gain call setup efficiency and facilitate convergence.

In West Orange, Verizon is aggregating traffic from 51 end offices where Class 5 switches connect to customers. These offices used to feed into tandem switches using from four to 48 individual T-1 trunks. The tandems connected to other tandems or to other carriers' networks. Competitive local exchange carriers and wireless providers need to connect to Verizon's local network so their customers can complete calls to Verizon customers and vice versa.

With the Nortel ATM gear, overflow traffic from an end office is directed to Nortel MG4000, which takes in the Class 5 TDM traffic and converts it to ATM and passes it along over OC-3c trunks to Nortel Passport 15000 switches. Three of these switches are arranged in an OC-12 ring to form a regional core.

The MG4000s become virtual tandems, performing the same function as tandems but using virtual circuits. This enables the use of larger physical trunks — OC-3 rather than T-1 — that contain multiple logical T-1 circuits. With traditional tandems, any trunking changes would require manual provisioning of new T-1s, an expensive and time-consuming process.

The Nortel gear supports dynamic provisioning in which virtual circuits are redeployed as needed via software instructions, requiring no manual provisioning, Harrington says.

"Dynamic provisioning finds the best path for the best results for this call," says Harrington, adding that the Nortel ATM gear has carried more than 1.8 million voice calls since it went live in February.

One benefit of the new system is that it distributes the switching power to more sites. Rather than having just one Class 4 tandem switch in West Orange, there are three ATM equivalents at different sites in the area. This facilitates faster network recovery and lessens the impact of a switch failure, Harrington says. The closer to customers that the packet technology extends, the more options the carrier has to reroute traffic around problems.

Verizon plans to add MG4000s to migrate all the traffic in the West Orange area to ATM.

"The point is to get it on ATM as soon as possible," Harrington says.

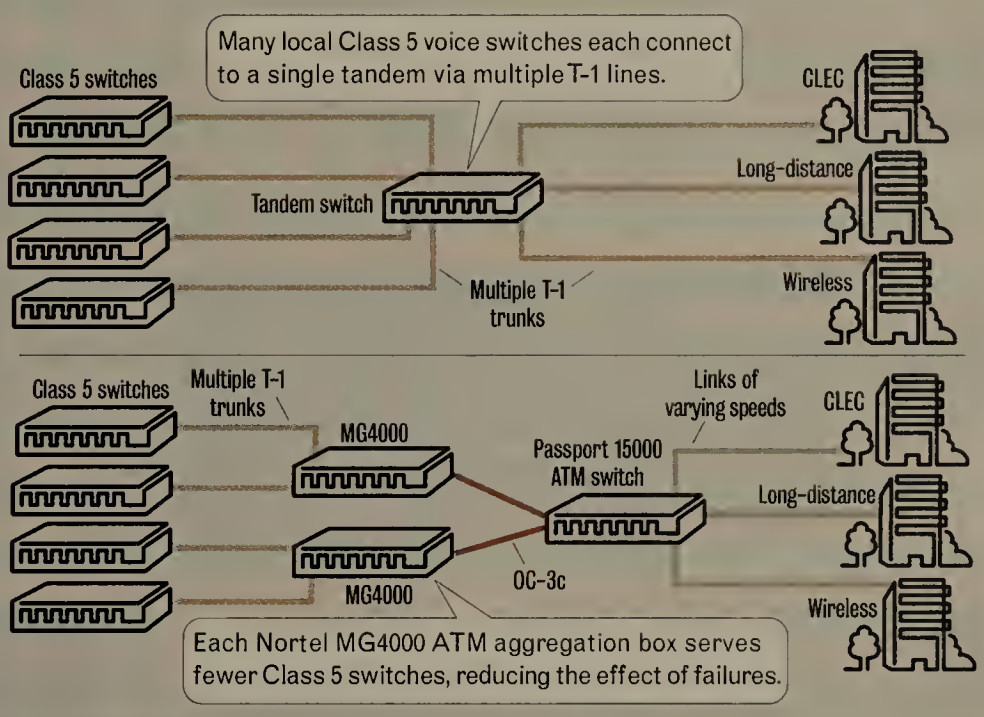
Key to using this equipment is that it blends in with Verizon's existing operations support systems (OSS) software. Nortel already had certification to interoperate with OSSs that were written to Telcordia specifications, so the gear worked with Telcordia-based OSSs that Verizon uses. But Verizon also had some non-Telcordia OSSs that required the regional Bell operating company to write interfaces to the Nortel equipment, Harrington says.

The Nortel Passport switches also can support IP cards that will enable a transition to IP without replacing an entire chassis, he says.

Nortel plans to add significant IP enhancements to the Passport line later this year and next year. ■

Verizon starts shift to packet voice

Use of ATM gear gives Verizon a more distributed, reliable network.



Short Takes

■ **Tellabs** last week said it will partner with **Telcordia** to define a new feature for the Telcordia operations support systems designed to help carriers deploy Ethernet services. The new feature, SONET virtual concatenation, will be developed under the Telcordia **Generic Feature Development Services** program. The software will let incumbent local exchange carriers add Ethernet services over their existing SONET infrastructures.

The software will support inventory, alarming and automated flow-through provisioning, Tellabs says. With this development, the Telcordia OSSs will support Tellabs' 6400 transport switch, which supports Ethernet-over-SONET virtual concatenation.

■ **Juniper Networks** recently completed the acquisition of edge router competitor **Unisphere Networks,** a purchase announced in May. The value of the transaction at closing was approximately $585 million, which includes $375 million in cash and 36.5 million shares. The original value of the deal was pegged at $740 million.

Concurrent with the acquisition's closing, Juniper and **Siemens** have commenced a previously announced reseller agreement whereby Siemens will resell, service and support Juniper products on a global basis. This agreement also gives Juniper access to Siemens' customer base in 190 countries.

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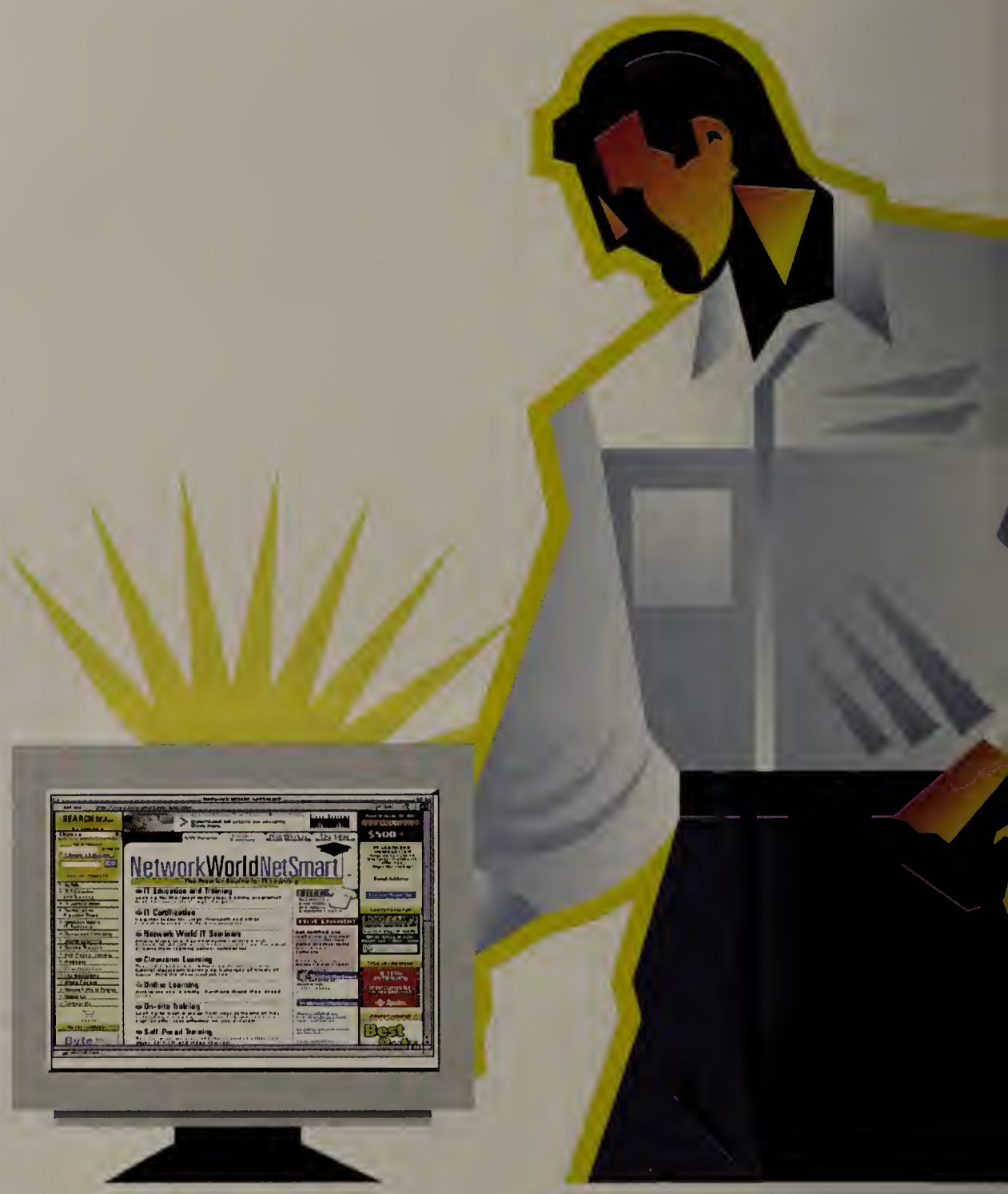

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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Grid computing uses spare CPU power

■ BY JACQUES SURVEYER

The goal of grid computing, which gets its name from its gridlike architecture, is to link surplus computing power and other spare IT resources with clients who have periodic needs beyond the capacity of their machines.

There are four factors behind the growing interest in grid computing: the evolving of key standards such as TCP/IP and Ethernet in networking; the ever-increasing bandwidth on networks reaching into the gigabit range; the increasing availability of idle megaflops on networked PCs, workstations and servers; and the emergence of Web services as a logical and open subdivider of software computing tasks.

Grid computing software divides a task into subtasks, finds spare processors and other critical resources on the network, distributes the subtasks, monitors their progress and restarts any subtasks that fail. Finally, grid computing engines aggregate the results of the subtasks so the job or task can be completed.

One type of grid computing arrangement is a local cluster, which typically uses one main grid server on a single very-high-speed network. The grid machine handles one major task, and a small set of users are allowed to manage that task. A broader group of users are allowed to inspect and review intermediate and final results.

The next step up is the grid campus. Typically it involves many grid servers and many tasks. However, all the processing is done behind a firewall and network speeds are still fairly fast and within a known range.

Yet another approach is a global grid, which opens usage to machines anywhere on the Web and/or other private networks. It requires considerable effort to discover available resources and schedule tasks on these machines because they can differ so much in response times because of Web and network latencies.

Also, because traffic goes over the Web, security becomes a major administrative task, as does scheduling and monitoring dozens if not hundreds of grid programs and their legions of users with diverse roles and access privileges.

In terms of the impact on networks, grid engine software has reached a very high level of scheduling, dispatching and monitoring sophistication, so if a grid needs to cede a machine or clusters of machines back to end users, it can do so transparently and quickly.

The impact on network capacity depends on the nature of the application, but bandwidth monitors can be put into place to guarantee levels of standby network capacity.

The impact on applications is more difficult to characterize. For applications that need to be run in their entirety on a spare processing node, grid computing will work. But applications that need to be distributed over several processing nodes require some setup or reprogramming.

First, there is a class of applications known as embarrassingly parallel. These applications are easily broken into discrete computing subtasks that have little or no dependence on each other. These applications require some scripting setup, but many grid vendors provide either templates or simple routines that help to automate setting up the parallel workflow scripts required to run them on the grid.

Next there is a set of applications that have complex interdependencies known as lattice, tree or other iterative structures. These require significant interprocess communication and messaging, and are sometimes referred to as being codependently parallel. Preparing them for the grid is more challenging. For some of them, vendors already have produced parallel versions. And new standards are quickly emerging that will simplify producing parallel capable software that runs on grid engines.

This leaves a set of applications that have to be reprogrammed for parallel operations. Work is being done to automate this process.

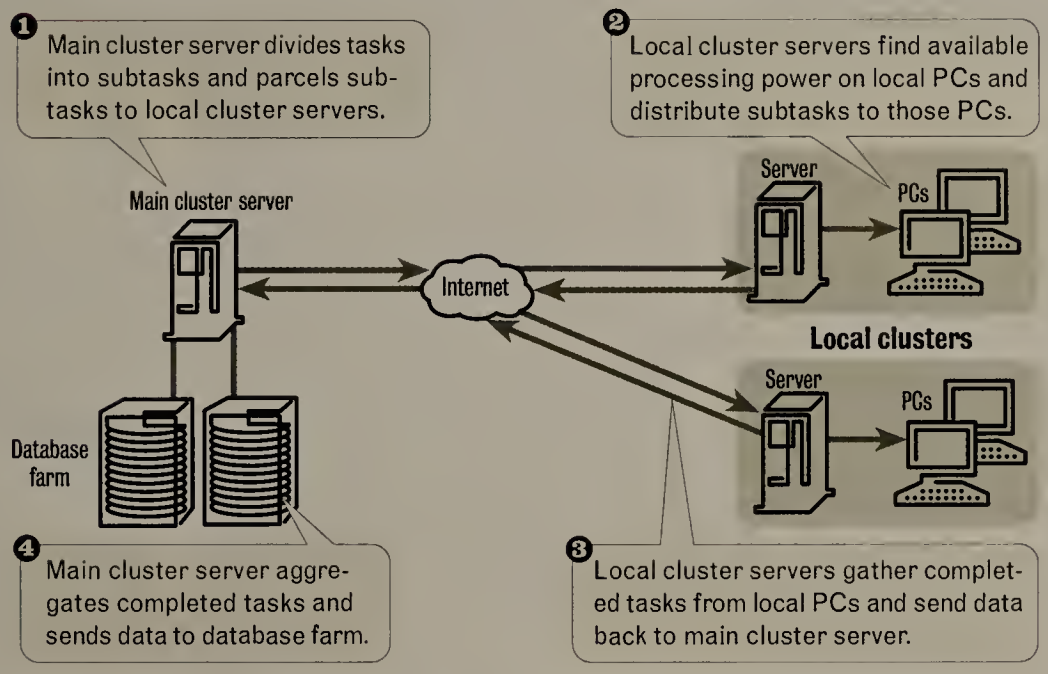
The Global Grid Forum is working on a standard, the Distributed Resource Management Application API, that could improve grid applications development and interoperability by providing a standard API interfacing to an array of grid engines and operating system platforms.

Surveyer is a consultant and writer in Toronto. He can be reached at jbsurv@sympatico.ca.

HOW IT WORKS

Grid computing

In the global grid computing scenario, unused processing power on local clusters of computers scattered across the Internet would be harnessed to address a single, complex application.



Ask Dr. Internet

By Steve Blass

In your story on Internet options (www.nwfusion.com, DocFinder: 1228), if you select "Never dial a connection," how do you connect to the Internet? If you select the Internet icon you get a "Page cannot be displayed" message, and "Dial whenever a network connection is not present" doesn't help either.

My suggestion to select "Never dial a connection" was aimed at stopping desktop computers on a LAN from looking for a modem connection. Opening the "dial up connection" panel under "control panel" and double-clicking a dial-up connection icon still will dial the modem and establish an Internet connection for mobile computers that sometimes need to use a modem connection when they are not connected to a LAN. The "never dial" choice in the Internet options settings of Internet Explorer tells Microsoft applications whether to try to dial, but doesn't stop them from using a connection you set up manually. The "Dial whenever a network connection is not present" setting should trigger a dial sequence if you remove the network adapter from the system when you want to use the modem. PC network cards are easy enough to remove, but built-in Ethernet controllers seem to fool the network connection detector, even when there is no network connected.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

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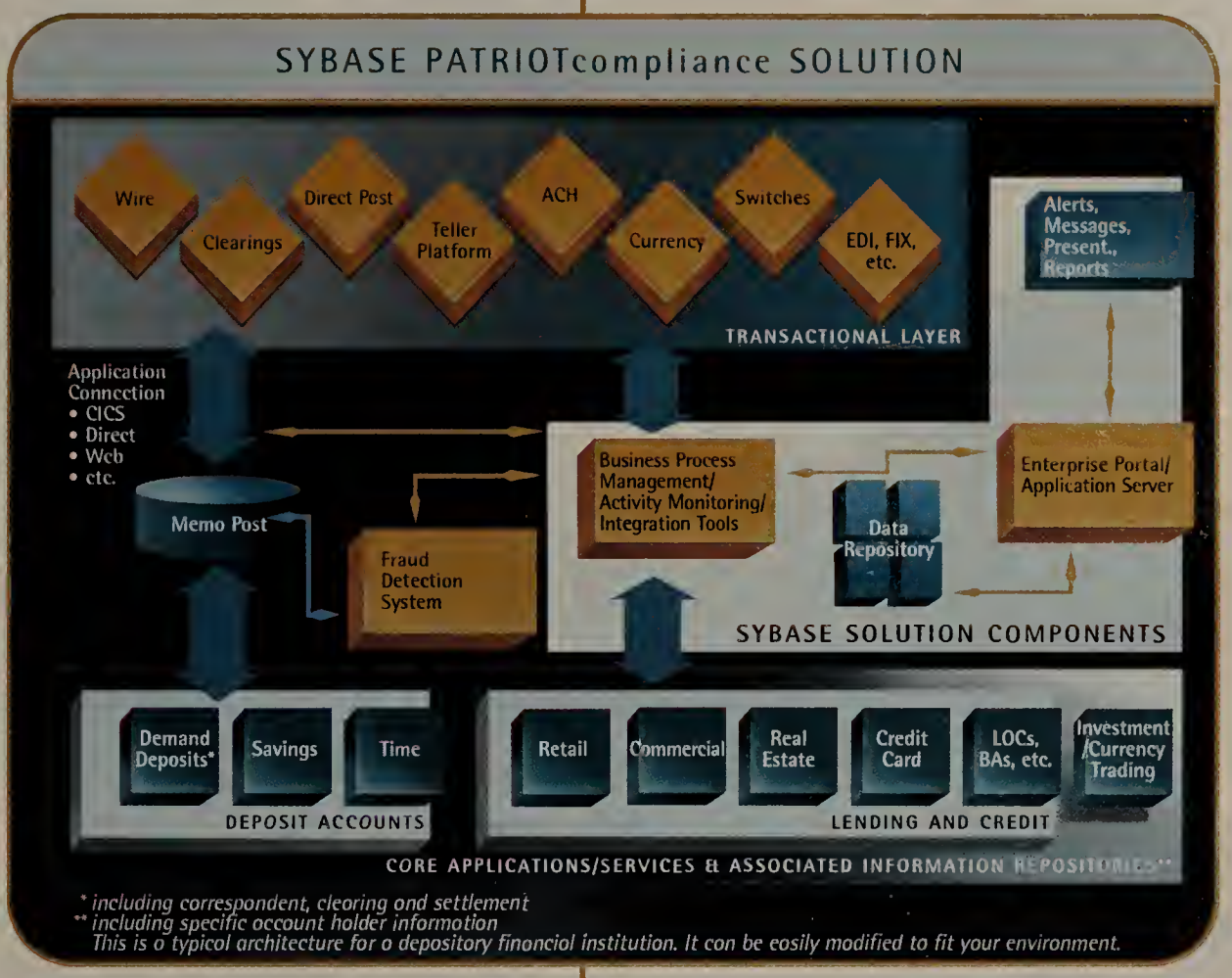

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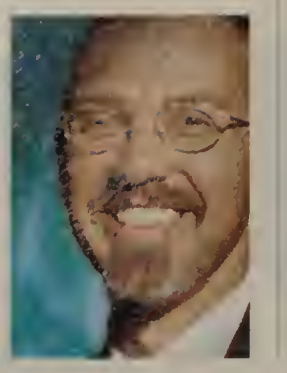
GEARHEAD INSIDE THE NETWORK MACHINE

Mark Gibbs



The ABCs of MIB

This week we tackle the topic of MIB . . . no, not "Men in Black II" (which we quite enjoyed — essentially a remake of the first MIB movie with better effects). No, this MIB is the Management Information Base of SNMP.

Actually there is only one SNMP MIB — all the things that are generally referred to as MIBs are really variants and extensions of the basic data structure.

As we said a couple of Gearheads ago: The MIB, which was defined by the Internet Engineering Task Force (IETF), is a hierarchical collection of objects organized in a tree. To prevent naming conflicts, the Internet Assigned Numbers Authority manages the structure and objects in the tree.

The MIB contains the name, object identifier (a numeric value), data type and indication of whether the value associated with the object can be read from and/or written to. While the top levels of the MIB are fixed, specific subtrees have been defined by IETF, vendors and other organizations.

At the top of the MIB tree is the most general information available about a network, and each branch below contains more detail about specific devices and services.

According to RFC 1155, "Structure and Identification of Management Information for TCP/IP-based Internets": "The root node itself is unlabeled, but has at least three children directly under it: One node is administered by the International Organization for Standardization, with label iso(1); another is administered by the International Telegraph and Telephone Consultative Committee, with label ccitt(0); and the third is jointly administered by the ISO and the CCITT, joint-iso-ccitt(2)." There are many, many layers under those.

Variables in MIB are named using Abstract Syntax Notation 1 (ASN.1), an international standard for representing data types and structures. For example, the MIB variable in the IP subtree that counts incoming IP datagrams is named internet.mgmt.mib-2.ip.ipInReceives.

But when sending and receiving messages under SNMP, variable names are not stored as text strings. Instead, a numeric form of ASN.1 is used to represent each named node in the tree. This is not only computationally simpler but also reduces the size of packets.

These numeric labels create what is effectively an outline numbered ID, starting with the root of the tree as 1. So, 1.1 is a child of the root and a sibling of 1.2 and a parent of 1.1.n.

A complete numeric name that starts from the root of the MIB tree is called an object ID (OID).

So for our example using the variable ipInReceives, the sequence of numeric labels that refer to it are 1.2.1.4.3.

But that's not all. In an SNMP message the numeric representation of a simple variable name will have a zero appended to signify that the name represents the only instance of the variable in the MIB. In other words, there are no other identically named variables. So, for ipInReceives, the exact form is "1.2.1.4.3.0."

Now, remember that a manageable device is called an agent and a computer that is used to work with an agent is called a network management station (NMS). The management software that runs on an NMS is called a management application.

Network equipment that is designed to be managed by SNMP must implement a MIB, and the management application must be told what can be managed on the agent. The collection of the descriptions of all the manageable features might be either a standard or custom MIB subtree, which is described by a MIB module. MIB module files are loaded into the NMS so that the device can be managed.

You might be wondering how many MIB subtrees there are. The Web site mibCentral (www.mibcentral.com) boasts that it indexes "over 4,600 SNMP MIBs representing over 630,000 MIB object definitions."

Be that as it may, the reason we started on the topic of SNMP (see "Logging messages with SNMP," www.nwfusion.com, DocFinder: 1225) was that like syslog, SNMP is a standard that includes a mechanism for devices such as routers to send status and error messages. This mechanism is called a trap.

SNMP trap messages contain OIDs followed by one or more variables each with a value that the NMS decodes by mapping the OID to its variable name. The NMS then maps the data associated with the OID into its display, logging and automated procedure subsystems.

So, we now know what syslog messages are and what SNMP traps are. How can we handle them all? We'll discuss this issue next week.

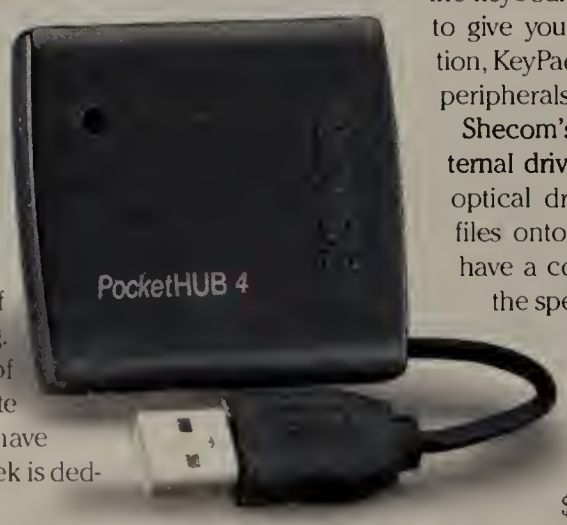
State your status to gearhead@gibbs.com.

Cool Tools: Stuff we like

Quick takes on high-tech toys

By Keith Shaw

The more that new devices come out, the more that we want to test them at the Cool Tools test lab. That said, a pileup of good stuff has been accumulating. With the long July 4 weekend out of the way, we wanted to give an update of some recent Cool Tools that have made an appearance here. This week is dedicated to stuff we like:



Kensington's PocketHub provides four additional USB ports.

Targus' USB Notebook Light: A small and flexible light that clips on to your notebook's screen to provide illumination in dark places. The light connects to a Universal Serial Bus (USB) port and doesn't require any drivers — just plug it in and light appears. It comes with a handy carrying case. Cost: $20, www.targus.com.

Kensington's PocketHub and PocketKeyPad: If you are carrying around a lot of USB peripherals, eventually you will need extra USB ports. We like Kensington's PocketHub for its small size and portability. Just plug it in and instantly get four additional USB ports. PocketHub needs to be powered separately, but the adapter is not too large and the whole thing comes with a travel pouch. Cost: $50, www.kensington.com.

Another Kensington notebook accessory we like is Pocket KeyPad. One thing that always annoyed us about owning a notebook was the lack of a numeric keypad on the keyboard. Pocket KeyPad connects via USB to give you this PC-type functionality. In addition, KeyPad has two extra USB ports for other peripherals. Cost: $50, www.kensington.com.

Shecom's Ikebana USB 2.0 DVD+RW/+R external drive: This is an easy-to-install external optical drive that can burn audio CDs and files onto DVD-R and DVD-RW disks. If you have a computer with USB 2.0 functionality, the speed of the drive increases (we tested on an older USB 1.1 notebook). The drive comes with excellent bundled software that lets you edit digital video and make your own DVD movies. Cost: $460, www.ikebanadrive.com.

Micro Research's 3D-Album for Windows: This easy-to-use photo software lets you take all your photos and turn them into 3-D photo albums, complete with background music and/or voice-overs. Instead of just putting your personal photos into a PowerPoint presentation, use this program and have your photos appear in a rotating cube, for example. You also can create your own screen saver that includes animation and music. Extra animations and "presentation skins" are free for download once you buy the software. Cost: $40, www.3d-album.com.

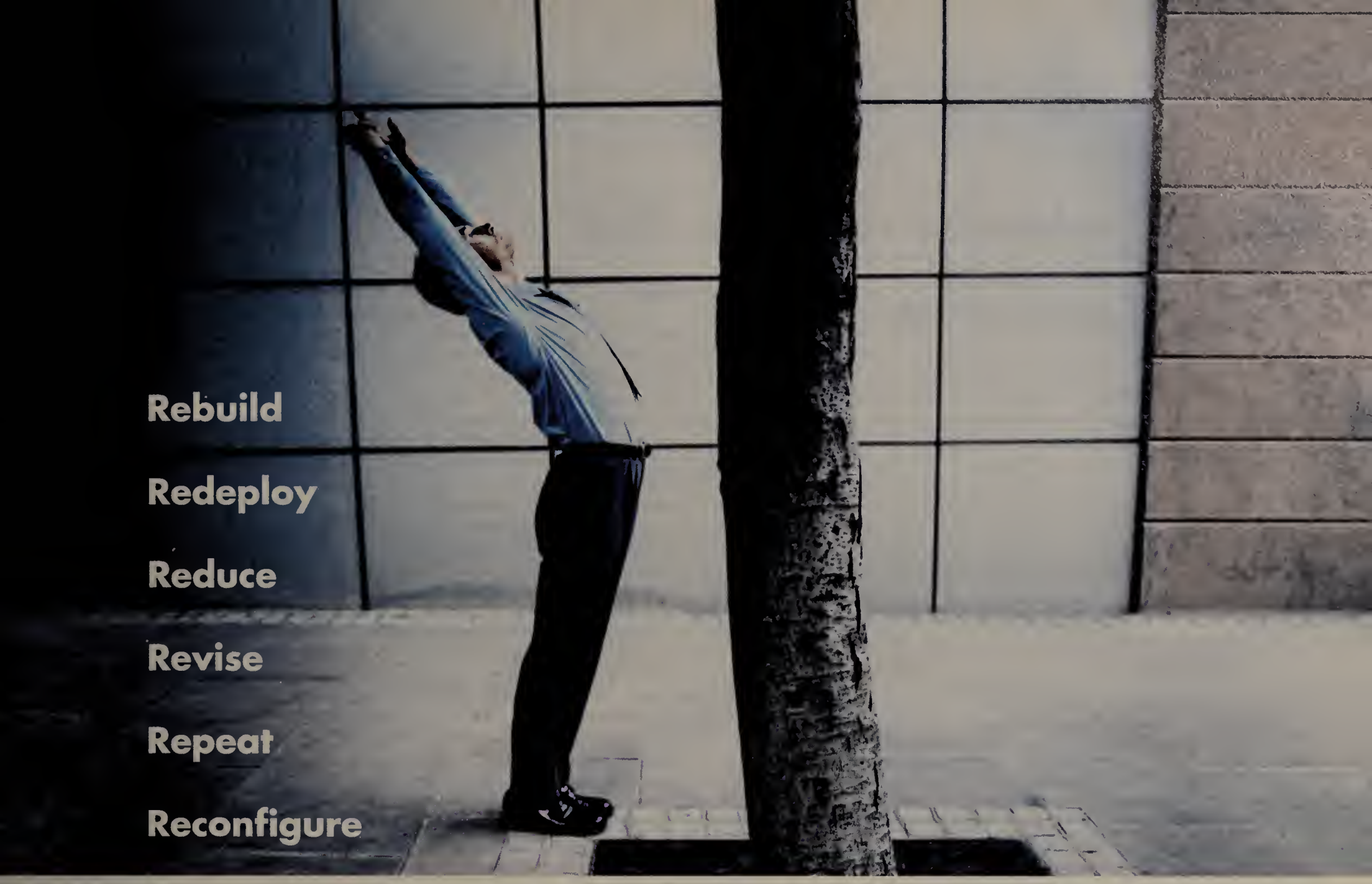
Premier Programming Solutions Text-to-Audio Version 5: Here's another software tool that gives quick text-to-audio conversion. You can convert long pages of document text (or text from a Web page) into speech for listening later. The software can convert to nine audio formats, including MP3 and WAV. The software also includes a built-in talking word processor and uses Natural Voices software from AT&T. Cost: $50, www.readingmadeeasy.com.

Nextel/Motorola's i95cl phone: The latest phone that runs on Nextel's integrated digital enhanced network (iDEN) is the i95cl, which is Nextel's first color screen phone that also lets users download Java applications to the phone. The phone has a clamshell design with an external LCD screen that displays the phone number for incoming calls so you don't have to open the phone. It comes with 10 preloaded musical files and nine ring tones that include polyphonic tones. Additional applications can be downloaded from Nextel's iDEN Update Web site.

The i95cl phone features a color screen, and Java applications can be downloaded.

The phone measures 3.5-by-1.9-by-1.2 inches and weighs just less than 5 ounces with its slim battery, or 5.3 ounces with a standard battery. The standard battery offers up to 206 minutes of talk time or 75 hours of standby time, Nextel says. It also features Nextel's Direct Connect feature, a walkie-talkie function that lets users talk to up to 100 people at the press of a button. Cost: $400, www.nextel.com.

Shaw can be reached at kshaw@nww.com.



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EDITORIAL

Neal Weinberg

Network processing units get edgy

Network processor makers haven't exactly made good on their original claim about four years ago of killing off ASICs, but they are finding a place in the design of new switches and routers, especially at the edge.

Network processors, or network processing units (NPU), were hyped as the next great advance in network hardware design. ASICs gained popularity over general-purpose chips because they offered wire-speed performance, but the design cycle for the hard-wired ASIC chipsets was relatively long and once the ASICs were out, they didn't allow for much in the way of flexibility.

NPUs promised the best of both worlds — wire-speed performance and software-based programmability, which was supposed to translate into less expensive and faster time to market for innovative switch and router makers, plus the ability to perform software upgrades in the field.

What leading NPU vendors such as Intel, IBM and Motorola learned was that achieving both Layer 2 to Layer 7 programmability and high-end wire-speed performance was easier said than done. Furthermore, writing the software code for an NPU-based Web switch wasn't all that much faster than designing an ASIC. And the cost savings haven't been that dramatic, because in many cases an NPU requires a coprocessor to handle some of the workload.

Today, expectations for network processors have come back down to earth. NPU advocates concede that we probably will not be seeing NPUs at the network core doing sophisticated traffic management at speeds of 40G bit/sec. That rarefied space is being left to the ASICs.

NPU makers are now targeting the network edge, where network processors are able to exploit their advantages in areas such as packet classification and traffic management. This will help vendors develop better products in areas such as quality of service and voice over IP.

At a recent conference on network processors, analyst Linley Gwennap reported that NPUs have scored nearly 400 design wins. Intel is the market share leader at 30%, followed by AMCC at 22%, IBM at 13% and Motorola at 11%.

But there are also plenty of smaller innovators in the market, including Bay Microsystems, Internet Machines, Fast-Chip, Azanda Network Devices and Cognigine.

Despite the slow start for NPUs, Gwennap says they offer fundamental advantages over ASICs in certain areas. While it's premature to put ASICs on the endangered list, the NPU faithful still believe it's only a matter of time before NPUs rule the network world.

— Neal Weinberg
Features editor
nweinberg@nww.com

opinions!

The next killer app

I like Frank Dzubeck's idea of a grid system (www.nwfusion.com, DocFinder: 1223). However, he promulgates a persistent myth: More bandwidth will solve a network performance problem. In referring to wide-area access, he states: "To achieve zero latency, a grid requires Ethernet access at a minimum speed of 100M bit/sec and backbone interconnectivity at gigabit-per-second speeds."

Latency is not a bandwidth issue. It is a speed of transmission issue, and the farther away the points communicating are, the greater the latency will be.

Copper can achieve propagation speeds over 90% of the speed of light, while fiber is a bit slower (the speed of light — 186,000 miles per second — is the speed in a vacuum, not glass). Until the speed of light is repealed, we will always have latency. Of course, there are other equipment-related delays but they can be engineered around.

Latency will bite you on application response time when the application demands a chatty interaction between communicating computers. For each application turn, or round-trip communication, the latency penalty (in time) is paid twice. Some applications can require thousands of turns per operation — they will perform poorly or not at all on a WAN. Until applications are designed to tolerate latency, the intergrid and extragrid are not likely to come to pass.

Sean McNamara
Network analyst
Arlington, Va.

IPX-cellence

Regarding Kevin Tolly's column "IPX-cellence over-looked?" (www.nwfusion.com, DocFinder: 1224): It doesn't matter whether I use IPX or IP on my Novell 5.X servers; they are as stable as a rock.

Our company has migrated to IP only, but because of older NetWare 4.11 servers, we maintain local LANs with IPX running.

To save on WAN overhead (and to make it easier on the telecom department), IPX has been turned off completely.

All our Novell 5.X servers have IPX and IP on them and are available via IP to IP-only sites. To get to the older NetWare 4.11 servers, Novell has a great utility called "scmd" on 5.X servers, which we run on at least one 5.X server at each site.

With that utility, I can route IPX through IP over the routers to other sites, and users cannot tell the difference. They go to their network neighborhood and get to all the NetWare servers.

Steven Comeau
Senior LAN administrator
Radio Frequency Systems
Marlboro, N.J.

In his column Kevin Tolly talks about the need for statistics in IPX and why there are really none being developed and asked for. It is probable that the legacy status of IPX is one of these reasons, but is not the primary one. The primary reason deals with the purpose of statistics.

Nobody (except maybe the government) keeps statistics just for the purpose of keeping statistics. Normally the purpose of statistics is to justify the need for an improvement to the system. In general there is no need for improvement in IPX networks. All of the IPX networks I know of and the services they are providing are running at or above expectations.

Ray Todd Stevens
Senior consultant
Stevens Services
Bedford, Ind.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! www.nwfusion.com Find out what readers are saying about these and other topics. **DocFinder: 1222**

PACKET EVANGELIST

Steven Taylor

VoIP, common sense and security

I recently hosted a voice-over-IP seminar in New York. On the taxi ride from LaGuardia to midtown, my driver mentioned that he was a student taking network classes. When I told him I was going to be speaking on VoIP, he immediately asked, "But is it secure?"

My answer was no, but it's a helluva lot more secure than the cell phone you were just talking on.

I'll admit it: Security is a tough issue. It's a lot safer and more convenient not to do something than to move forward if there is a security issue that can come back to haunt you. Consequently, security has recently become one of the major reasons given for delaying the implementation of VoIP.

The ultimate decision point for all security issues should be how difficult it is to gain access to confidential information, not whether it is theoretically possible to intercept the information. All information can be compromised. Our job is to make sure that the effort required to gain access to the information is several orders of magnitude greater than the intrinsic value of the information. So what are the major security concerns about VoIP and how real are they?

No. 1 on the list is usually the fact that Ethernet is a shared-medium technology. Ethernet switching has negated this concern. Essentially all Ethernet connections are switched, which means that you have a dedicated path to your desktop.

What about sending information over the Internet? I have yet to hear of a documented case of information being pirated while in transit over the Internet. It's not worth the trouble. Further, most VoIP implementations today are over corporate intranets.

What about sniffing VoIP packets? Possible, but unlikely. One could quite reasonably argue that VoIP is more secure than traditional voice because the transmission protocol is significantly more difficult to decode than traditional digital voice.

Denial-of-service (DoS) attacks? A DoS attack could cripple your VoIP implementation. But keep two facts in mind. DoS attacks occur primarily on the Internet, and, again, corporate VoIP tends to be on an intranet. And you already should be taking appropriate measures to safeguard your servers from DoS attacks for data applications. These same measures work for VoIP.

Voice is intrinsically unsecure, whether it's VoIP or traditional voice. The greatest risk for voice security is somebody hearing your conversation over the cubicle wall. And tapping into traditional PBXs doesn't take rocket science.

Ultimately, your organization must decide whether VoIP is sufficiently secure for you to move ahead. But as you make that decision, be sure that it's a reasonable, fact-based assessment and not an attempt to hide from reality.

Taylor is president of Distributed Networking Associates and editor/publisher of Webtorials.com. He can be reached at taylor@webtorials.com.

Security has recently become one of the major reasons given for delaying the implementation of VoIP.

SPEAKING THE LANGUAGE

Linda Musthaler

NetWare: It just works

About six years ago, my company made a strategic IT decision to migrate from Novell NetWare to Microsoft Windows NT. At the time, the decision seemed reasonable: Novell was on the wane, NetWare was growing a little stale, and NT and its myriad application products were touted as the new "industry standard." We were not alone in our transition — corporate customers were making this switch in droves.

In hindsight, I regret that we ever made this move. I want my NetWare back! Why? Because unlike the Microsoft products we deployed in its place, NetWare works.

Hardly a day goes by when our network administrator isn't checking the Internet for Windows bug alerts and software patches. He regularly has to restart our Exchange server because it has mysteriously stopped working. He loses sleep over Windows security concerns, as more security holes come to light. He logs more hours administering the Windows-based network than he ever did with our Novell network.

Again, we are not alone. Far bigger businesses than mine encounter these same issues.

To see if the grass is really greener on the NetWare side of the fence today, I talked with a couple large Novell customers. They are pleased with their decisions to stick with Novell and NetWare.

The director of distributed computing at a Texas energy firm says his company has been using NetWare since the mid-1980s and has found it to be "rock solid." Along with the steady reliability of his networks (99.9% uptime, he brags), he says they are easy to manage. Managing his 300 servers remotely has let him keep costs down. What's more, he says the ratio of administrators to NetWare boxes is less than half what it is for the NT boxes that have crept in the door.

I heard the same story from an IT executive at a major hospital in Houston. When it comes to NetWare, he says, "it's predictable — God bless it." He's got about 240 servers under his NetWare umbrella, some of which drive life-critical applications. His group has maintained "five nines" of uptime, and he credits the maturity and predictability of NetWare for this high level of reliability.

This executive conducted a study a few years ago about possibly migrating from NetWare to NT. His analysis revealed the move would cost $4 million to $6 million. Aside from the cost, the hospital didn't switch because there was no business reason to move off NetWare. Today, the hospital is looking to further entrench itself with NetWare and related technology, including Novell's sign-on security products.

My fellow columnist Kevin Tolly, president of the technology consulting firm The Tolly Group, recently wrote about one of his clients that has NetWare and NT installed. As the network manager tells it, "NetWare server uptime is high and 'abends' are so rare that an occurrence is headline news." Meanwhile, the manager adds, "Windows server outages are so common they are a given and people rarely complain."

I also find that to be true at one of my large NT client sites. End users just seem to take it in stride when e-mail, or even access to the whole network, is down, because unplanned outages aren't uncommon. But why should we have to put up with something that doesn't work as expected?

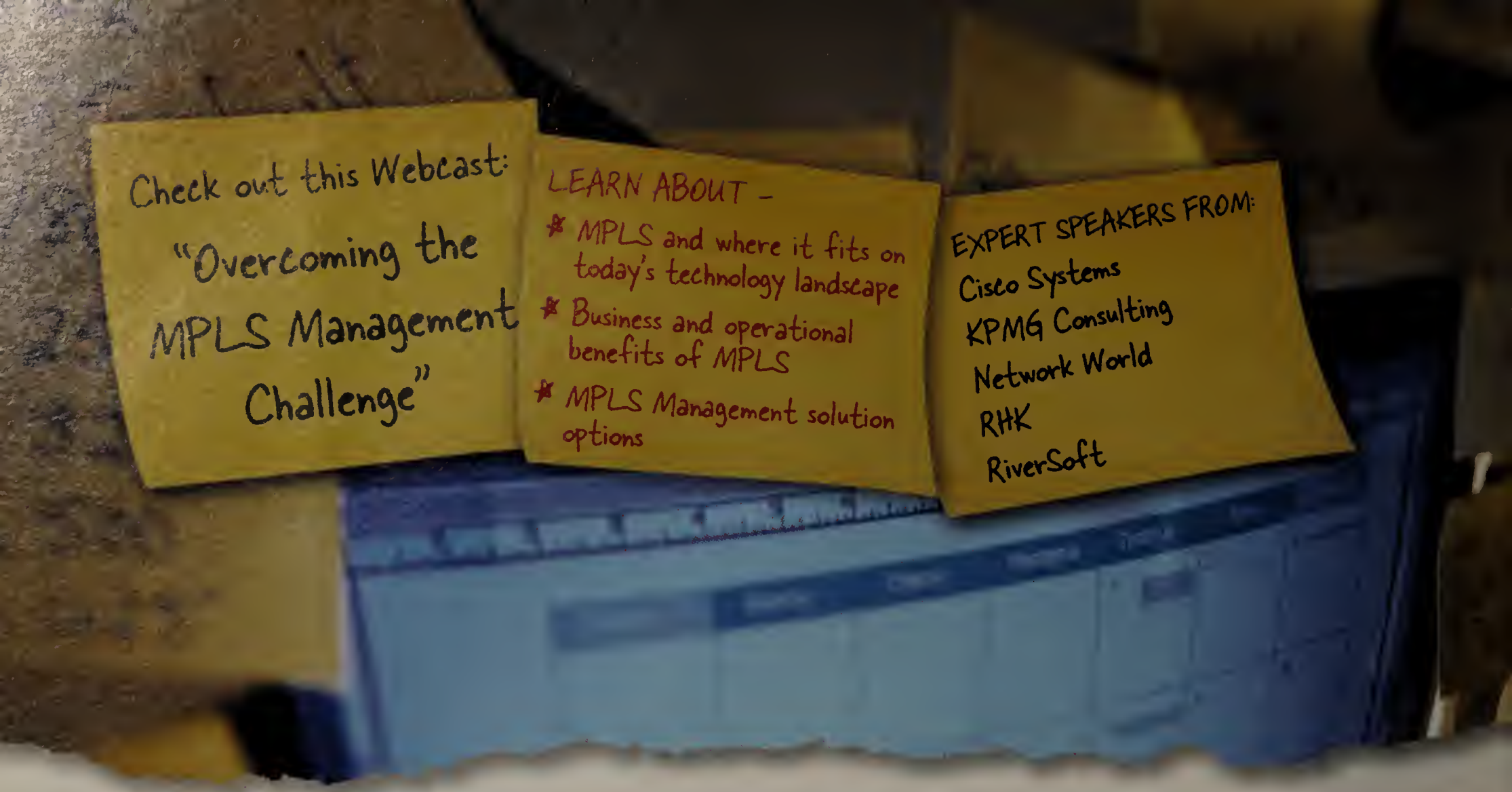
The Network World Fusion forums are full of unsolicited testimonials about Novell and NetWare. One Certified Novell Engineer wrote, "The only time I reboot [my NetWare] servers is when a service pack comes out, unlike windows nt [sic], which every time I change something needs to be rebooted, never mind the memory leaks, poor administration, general weirdness, poor security etc. that you get with windows nt."

Another network manager wrote in his forum, "As a network admin, my money goes to Novell."

These network executives love NetWare so much because of good management tools, a great directory service, a strong interoperability story and, most of all, because it just works. Maybe it's time to rethink your company's decision to abandon NetWare and invite Novell back in the door to see what's new. I know my company has.

Musthaler is vice president of Currid & Company, a Houston technology consulting firm. She can be reached at linda@currid.com.

I want my NetWare back! Because unlike Microsoft products we deployed in its place, NetWare works.



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Get ready for Windows .Net Server

If you're still grappling with a Windows 2000 upgrade, here's a heads-up — Microsoft is getting ready to release another server operating system.

■ BY MITCH WAGNER

Windows .Net Server, scheduled to ship in the second half of this year, was code-named Whistler and went by the working titles Windows 2002 and Windows XP Server, until Microsoft decided to add the .Net label to most of its products as part of its strategy of promoting Web services.

Thus, the biggest change in Windows .Net Server, compared with Windows 2000 Servers, is that the new product ships with embedded Web services technology. Specifically, .Net Server will be the first server operating system from Microsoft to ship with native support for .Net Framework, a set of infrastructure tools needed to run .Net applications.

.Net Framework, which shipped as a separate software package early this year, is required for running .Net applications. It includes the common runtime library to run code in multiple languages, including C#, C, C++, Visual Basic and COBOL. .Net Framework also provides a set of class libraries for building Web services.

"Windows .Net Server is just part of the bigger .Net umbrella, which we're excited about," says Brian Farrey, president of TMP Technologies, the IT unit of TMP Worldwide, which is the parent company of the Monster.com job board.

Monster.com is beta-testing Windows .Net Server on about a half-dozen of its several hundred Windows servers, as part of an effort to build Web services to which business partners can connect, for a fee, for instance, to build applications that automate uploading resumes.

The framework will be available as an add-on for other versions of Windows, but its inclusion in Windows .Net is expected to drive further acceptance of .Net applications. Over time, as Windows .Net becomes the standard Windows server platform, developers will be able to assume its presence when they write applications for Windows, analysts say.

The .Net Framework on Windows .Net Server will likely provide better integration, robustness, reliability and performance than running the framework on other servers, says Alex Feinman, senior software engineer for Corrigo of Redwood City, Calif., an application service provider that's beta-testing Windows .Net Server.

The software will be available in four configurations:

- **Entry-level Web Server,** tailored for Web serving and hosting.
- **Standard Server,** for smaller businesses.
- **Enterprise Server,** a high-end version.
- **Datacenter Server,** the top-of-the-line version designed to compete with high-end Unix and mainframes.

Beyond Web services

Windows .Net Server is not just dedicated to Web services. It will be a fully functional server operating system, hosting applications and Web sites, and running file and print services. And it features improved manageability, stability and performance.

• Internet Information Services (IIS) Version 6, which is included in Windows .Net Server, has a new process model. "It allows you to fence off processes, so if you have a process or application that is behaving poorly, you can take the process or application down without having to bring the entire Web site down," says Bob O'Brien, group product manager for Microsoft Windows .Net Server division.

"In cases like memory leaks, IIS can cycle itself down gracefully and bring up a new instance. You don't have to have someone in the network group go out and reboot. That is a great advantage," says Christopher Bowen, principal software engineer at Monster.com.

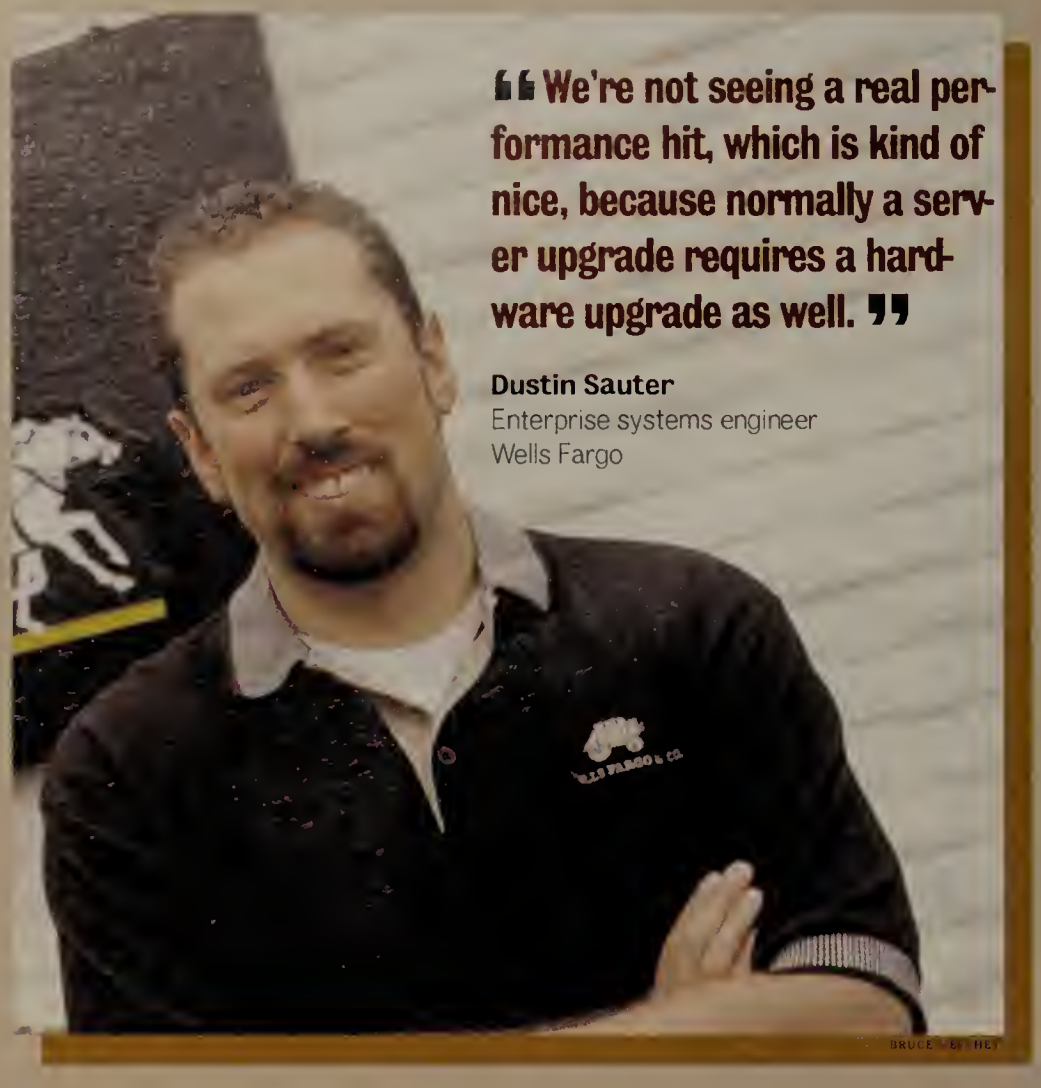
• The operating system also improves management of Dynamic Link Libraries, to avoid so-called "DLL Hell" problems, where conflicting DLLs result in application errors, he says.

• Windows .Net Server does not require a hardware upgrade when

Tips for companies considering Windows .Net Server

migrating from Win 2000, says Dustin Sauter, enterprise systems engineer at Wells Fargo. "We're not seeing a real performance hit, which is kind of nice, because normally a server upgrade requires a hardware upgrade as well."

company, with 120,000 users, has Windows .Net Server installed on about 55 servers, including 20 Active Directory Domain Controllers and the rest hosting applications such as file and print servers, Web servers and SQL Server.



"We're not seeing a real performance hit, which is kind of nice, because normally a server upgrade requires a hardware upgrade as well."

Dustin Sauter
Enterprise systems engineer
Wells Fargo

The minimum requirement for the latest beta version of Windows .Net Server are a 133-MHz processor, with at least 550MHz processor speed recommended; 128M bytes RAM minimum with at least 256M bytes recommended and 1.5G byte disk storage available for setup.

Sauter says that Wells Fargo is primarily interested in Windows .Net Server to improve its Active Directory deployment. Current versions of Active Directory have a limit of 5,000 users per group. The

• Windows .Net Server offers improved performance over Win 2000, Corrigo's Feinman says. Simply transferring code from Win 2000 to equivalent machines with Windows .Net Server resulted in a 15% to 20% performance improvement using Windows .Net Server Beta 3.

"That was pretty strange to see because it was prerelease code. I wasn't expecting it to be optimized. Which means that when they release it, it will be even faster," Feinman says. Corrigo has about 20 servers, 18 of which run Win 2000, and has been beta-testing Windows .Net Server on about a half-dozen machines.

• Windows .Net Server adds new functionality designed to improve availability. The operating system supports hot-swap memory, memory mirroring and HotPlug PCI to allow replacement of networking, storage and other PCI components without taking down the system, Microsoft says.

Windows XP linkage

Until now, Windows XP has been primarily a consumer product; Microsoft has not been pushing it for corporations. That changes with Windows .Net Server, which has functionality that works best with XP on the desktop.

XP with Windows .Net Server will let network administrators set policies and manage user desktops in groups. And systems administrators can disable software remotely and prevent it from running on an end user's PC, Microsoft says.

Shadow Copy Restore lets end users keep older versions of files on the server. Users who make changes to a file can go back and restore an older version. That functionality requires XP on the desktop.

Windows Media Player, which is Windows .Net Server functionality designed to stream multimedia over a corporate intranet, will provide XP users with instant-on playback, eliminating the initial buffering delay, Microsoft says. That feature is not available on other clients.

Slow deployment

But for all its new features, Windows .Net Server deployment is likely to be slow.

Most users have not yet finished deploying Win 2000, says Dan Kusnetzky, an analyst at IDC. "It's unlikely that people not even finished deploying Windows 2000 are going to stop what they're doing and start over again with the planning and testing of a new product," he says.

IGetSmart.com of New York, a division of Workflow Management, which owns Standard Forms, is beta-testing Windows .Net Server but is in no rush to deploy it.

"In the last year and a half, we went from NT to 2000 to XP and now .Net Server. It's too much to swallow," says CIO Mark Resh. "We'll take our time and do it as we need it."

Many companies, such as Toyota Motor Sales USA of Irvine, Calif., will wait a while to be sure Windows .Net Server is stable. "A bleeding-edge environment has its pain," says David Nelson, national manager of enterprise architecture for the company.

Microsoft says companies that have deployed Win 2000 initially should consider using Windows .Net Server in spots where its functionality is needed, such as for Web services, Active Directory or streaming multimedia.

Wagner is a freelancer writer living in San Diego. He can be reached at mwagner @TheWorld.com.

Pros and Cons of Windows .Net Server

Pros

- Native Web services support.
- Greater stability, manageability and performance.
- Improved Active Directory and streaming media.

Cons

- Released too soon after Windows 2000 and Windows XP.
- Some features require Windows XP on the desktop.
- Product activation requirements might prove time-consuming and burdensome for small companies.

Windows .Net Server release information

Microsoft released the latest beta version of Windows .Net Server in November, in which nearly all the features and functionality are present. The next version, Release Candidate 1, is due out this summer.

Licensing issues

One feature of Windows .Net Server that could mean problems for some companies is the product activation. Windows .Net Server will incorporate the controversial product-activation mechanism that's in Windows XP. To prevent piracy, Microsoft will let users who don't have a Windows volume license use Windows .Net Server for a trial period and then require them to obtain an identification number from Microsoft to continue to use the software. The operating system tracks the configuration of the server it's running on, and deactivates if it's copied to another, unlicensed server.

A problem can arise if a user makes extensive hardware modifications to the server running Windows .Net Server: The software might think it's been copied to another server and deactivate its license. Microsoft assures users that, in that case, the users can contact Microsoft to obtain an additional license number at no additional cost; but some customers are skeptical.

Companies with volume licenses will not be required to use product activation.

— Mitch Wagner

NetworkWorld Review

HP's RP8400 server

High performance, high cost, and worth it.

■ BY JOHN BASS, NETWORK WORLD GLOBAL TEST ALLIANCE

Product
Hewlett-Packard's RP8400

Price
16 CPU/16G byte memory configuration: $605,894.

Processor type
HP PA-8700 750-MHz RISC processor (650 MHz also available).

Number of processors
16

Total number of processors supported
16

Memory configuration
32G bytes (four cell boards with eight 1G byte DIMMs in each).

Number of RAM slots
64

Expansion slots present
16 hot-swap twin turbo PCI slots.

Hard disk description
18G byte, 36G byte and 73G byte LVD SCSI disks.

Number and description of hard disk bays
Four internal hot-plug disk drives.

Network interface
One Gigabit Ethernet and one Fast Ethernet.

CD-ROM
Two DVD drives.

Serviceability features
Toolless entry; one partition can be serviced while the other partition continues to run.

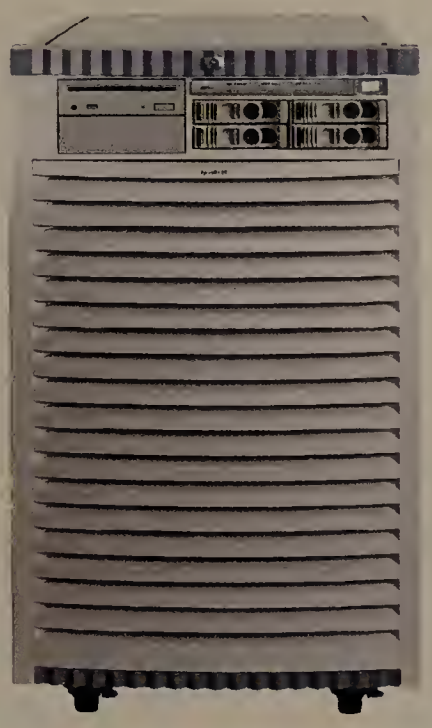
Availability features
Hardware partitioning; fault-tolerant power; ECC RAM; Dynamic processor resilience; hot-spare CPUs with iCOD; hot-swap PCI cards; independent PCI buses.

Manageability features
HP partitioning continuum offers workload management options. Hooks are provided for integration into industry standard system management platforms.

Security features
Host intrusion detection as a standard part of the operating system.

Bundled software
HP-UX 11i

Warranty
One year, same business day.



When a data center is faced with servicing large numbers of compute-heavy requests from the network, creating a cluster of midsize- to large-capacity servers might be one of the first solutions that pops into an IT manager's head. However, making applications cluster-aware might not be that easy or possible — not to mention the operational issues with maintaining a compute cluster. At this point, large multiprocessor machines become attractive. This class of server is typically expensive, large and specialized. Hewlett-Packard has a new midmarket solution called the RP8400 that could be a win if you are scratching your head over a similar problem.

The HP RP8400 is a 16-processor, rack-optimized server that can be configured into two fully functional servers. The server features HP's PA-8700 RISC processors and HP-UX11i Unix operating system. With a cost of $605,894 as tested, this combination of power, scalability and features comes at a steep cost. But given the need for the features and performance, it could be worth every penny.

Features

The RP8400 is rich with features. Its scalability is far beyond anything we've tested. Its 16 processors and 32G bytes of RAM can be segmented into two partitions that can each run its own hardware, PCI card and hard drive resources. However, we would have liked to have been able to reconfigure the partition without a reboot.

The RP8400 uses HP's Superdome multiprocessor and high-availability architecture. The CPUs and RAM are loaded into "cell boards." Each cell board can hold two or four processors and up to 16G bytes of RAM. Each cell board has a cell controller processor that connects all cell board processors and RAM. When the cell board is inserted into the chassis, the cell board controller connects to the system crossbar backplane.

The backplane manages the cell boards, system power and the connection to the 16-slot hot-swap PCI cage and system disk drives. An I/O controller that is connected to the core I/O controller and one of the cell controllers handles all I/O between two banks of eight PCI slots. Each PCI slot is connected to its own PCI bus, so the PCI slots are completely isolated from each other. With each PCI slot having its own PCI bus, a failure in one PCI card shouldn't affect the others, and they do not have to share bandwidth.

The RP8400 can be partitioned into a maximum of two partitions. Each partition has its own set of processors, RAM and I/O. Partitioning of the CPUs and RAM into separate systems is done on the cell board level. In other words, a partition can have no less that one cell board in the partition. However, you don't have to use all the cell boards in all the partitions.

Reconfiguring the system partitions requires a reboot, so it doesn't allow reconfiguring on the fly. A partition can be shut down independently while an active partition is still operational. Once a partition is shut down, the cell boards can be swapped while the remaining partition still is running.

Our RP8400 came shipped with four cell boards with four PA-8700 processors on each. Each cell board was loaded with 8G bytes of RAM for a total of 32G bytes for the entire system. A Gigabit Ethernet PCI card and a built-in 10/100Base-T Ethernet port was used to connect to our network. The operating system was loaded on a RAID 1 (mirrored set) hard disk partition. A second RAID 1 partition was used to store data.

Performance

The RP8400 gets a perfect performance score. Our CPU performance tests showed that the RP8400 configured with one cell board containing four HP PA-8700 750-MHz processors gives similar performance to an Intel-based server with four 500-MHz Pentium III Xeon processors. On the surface, it might seem like a 750-MHz processor should offer more performance than a 500-MHz one, but the Pentium has a much larger instruction set so more work can be completed in one instruction execution. The PA-8700 is a reduced instruction set computer design, which usually takes more instruction cycles to complete a task.

The Pentium III four-processor server only beat the RP8400 by 1.7% in a one-cell board configuration (see performance chart, page 38).

Net Results

HP RP8400

4.2 RATING

Company: Hewlett-Packard, (800) 613-2222, www.hp.com/products1/servers/rackoptimized/rp8400/index.html **Cost:** $605,894 (as tested). **Pros:** Highly flexible and scalable architecture. **Cons:** Expensive, local management interface needs work.

What's the score?

Performance 40%	5
Features 30%	4
Manageability 20%	3
Serviceability 10%	4
TOTAL SCORE	4.2

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.

When we added more cell boards, the CPU performance scaled nearly perfectly. In other words, doubling the number of processor doubles the performance. Other multiprocessor architectures we've tested typically have a 20% overhead when adding more processors. This results in only an 80% increase in performance when doubling the number of processors in those machines.

We noticed a large number of management processes were running by default. These processes are quite beneficial to provide Internet security and keep tabs on server operational metrics.

In our case, it wreaked havoc with our tests. These processes greatly affected the results of the CPU tests. After turning off these processes, the server achieved a much higher Secure Sockets Layer (SSL) transaction rate. The ability of the server to linearly increase the SSL transaction rate also improved.

Availability

The RP8400 has four redundant load-balancing 208 alternating current voltage (VAC) power supplies. The unit can run with a minimum of two of the 208VAC power supplies. Our testing was powered by two 208VAC circuits. Power is converted to 48 direct current voltage (VDC) through six redundant load-balancing 48V power supplies in the front of the chassis. There are two additional redundant load-balancing power supplies that feed +12VDC, -12VDC and +5VDC into the system.

The RP8400 has a matrix of nine fans in the front of the chassis, and the rear of the chassis has a matrix of 12 fans. The fans are hot-swappable and manageable. The cell boards have an elaborate cooling system for all four of the PA-8700 processors and the cell controller. A cooling fan is positioned in the center of each cylinder.

The cell boards are hot-swappable as long as the partition containing the cell board is inactive, and the cell boards are taken offline. If a cell board is creating errors or fails, there is no way to swap the board while the partition is operational. All 16 PCI slots are hot-swappable.

Serviceability

The case design and accessibility to the internal components is excellent.

Our RP84000 was shipped to us in a 4-foot-high, four-post cabinet with counterweights and outriggers in the front and back to keep the cabinet from tilting over when the 300-pound chassis is fully extended out of the cabinet. The chassis slides out of the rack easily on large rails. Flip-out handles along the bottom sides of the cabinet are available for easy installation and removal from the rack rails. When the chassis is retracted into the cabinet, four screws keep the chassis in place.

The front of the chassis is covered with a plastic bezel. The drives and power switch are accessible without having to remove the bezel. Once the bezel is removed, all the DC power supply units are exposed for easy removal and replacement.

Once the chassis is fully extended out of the cabinet, the right side of the chassis can be removed to allow access to the cell boards. The four cell boards are mounted horizontally in the chassis. Two levers on each cell board provide easy insertion and removal. The cell boards have a hinged cover that exposes the processors and RAM when open.

The top rear of the chassis exposes the PCI slots. The slots are hot-swappable. Small plastic tabs secure the PCI cards to the PCI slot. These tabs swivel out of the way for easy removal of the cards.

Manageability

The RP8400 came up short with manageability. There are lots of utilities for configuring and managing the system, but we found them difficult to use.

Command-line utilities for configuring and monitoring the system partitions worked well, but the command set was cryptic. This became frustrating when debugging a problem that developed when repartitioning the system. It was difficult to figure out which utilities we should use after reconfiguring the system.

The X-Windows-based partition management system let us configure a partition in such a way that the system wouldn't reboot. We had to go into a preboot configuration and monitoring application to dig out of the problem. This resulted in several calls to HP's customer support, which was excellent after we were directed to the proper support personnel. We were pleasantly surprised with the quality of the support, but if the utility had checked for a valid configuration before letting us save the configuration and reboot, we could have avoided calling.

The local monitoring applications were frustrating to use because of the user interface. The monitoring interface has an X-Windows tool palette that lets the user choose which utility to run. Unfortunately, we could only run one of these applications at a time. On top of that, the user interface appears to limit the number of open windows. We couldn't get to the data we needed unless we cleaned up some of the open windows in the application.

The good news is the basic management functionality is in place. We monitored the system hardware and got the utilization data we needed and configured the hardware the way we wanted. However, the user interfaces could use some work.

Conclusion

The HP RP8400 is a great piece of server hardware. CPU performance is impeccable, the configuration options are many, and the availability features are impressive. If you can justify the price for your heavy computational server application, this could be the server for you.

Bass, a senior technical staff member at North Carolina State University's Centennial Networking Labs (CNL) in Raleigh and co-author of McGraw Hill's Building Cisco Multilayer Switched Networks, *designs and leads the execution of the test suites. He can be reached at john_bass@ncsu.edu. Piyush Raju assisted with the testing.*

Server testing is performed at CNL, which tests network equipment and network-attached devices for interoperability and performance.

'True' scalabillity?

Performance tests on the HP RP8400 showed that doubling the processors doubled our performance:

Method	SSL transactions per second*
RP8400 1 cell board (4 processors)	104.38
RP8400 2 cell boards (8 processors)	209.53
RP8400 3 cell boards (12 processors)	315.61
RP8400 4 cell boards (16 processors)	419.58

*Average of 60 measurements taken over a 1-minute period.

Processor speed similarities

The RP8400 with its four PA-8700 750-MHz processors were similar in performance to a four-way Pentium III Xeon server with 500-MHz processors.

Method	SSL transactions per second*
RP8400 1 cell board (4 processors)	104.38
4-way Pentium III Xeon server (4 processors)	106.26

*Average of 60 measurements taken over a 1-minute period.

How we did it

We used Antara's Flamethrower for our testing, which consisted of two groupings of tests: CPU and network/file.

The Flamethrower was configured with four cards. Each card has two 10/100Base-T Ethernet ports. Each Flamethrower port was connected to a Cisco 2948 Ethernet switch at 100M bit/sec full duplex. The server was connected to a Gigabit Ethernet port on the Cisco 2948 at full duplex.

The CPU tests were conducted using the Flamethrower to generate HTTP requests of a small file from the server using Secure Sockets Layer (SSL). SSL requires a great deal of computing cycles to implement encryption, which stresses the CPU subsystem of the server. To further increase the CPU load, we disabled the ability for the client and server to resume SSL transactions over a previously negotiated SSL session. This configuration causes the client and server to create a new session each time a file is requested from the server. While sending an increasing SSL transaction rate to the server, the server processor utilization was monitored. The attempted SSL transaction rate and the successful SSL connection rate were measured when the processor utilization reached 100%. If the test equipment reported SSL transaction errors, the SSL transaction rate was reduced until the errors stopped. The SSL transaction rate was measured once per second for a minute to get an average value.

The tests were run against a Compaq 500-MHz processor Compaq ProLiant 6400 with 2G bytes of RAM to get a relative measure of the CPU performance of an Intel machine. The methodology was repeated against the RP8400 with only one cell card active in the partition to compare the performance of equal number of processors between the Hewlett-Packard PA-8700 and the Intel Pentium III Xeon processors.

The methodology was repeated against the RP8400 configured with two, three and four cell boards active. This series of tests gave an idea of the performance scalability with an increased number of cell boards.

Non-SSL Web tests were run by requesting a large file (10M bytes) from the server from the virtual clients implemented in the Flamethrower. This test verified the ability of the server to fill up the available bandwidth on the server connection to the network. The methodology for the non-SSL Web tests is similar to the SSL tests described above.

Our network tests were inconclusive because the test equipment couldn't fully load the server.

Global Test Alliance

Bass is a member of the Network World Global Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.

NetworkWorld Review

Stampede TurboGold

Big boost for Notes replication but high price factors into remote access savings.

■ BY MICHAEL CATON

When you add up the hotel telecommunications charges for your road warriors and the cost of providing enough dial-up lines for your remote users, providing access to corporate messaging applications becomes an expensive proposition. Even companies that outsource remote access still have to consider the time users spend waiting for data to transfer over slow links.

Stampede Technologies' TurboGold Performance Accelerator for Lotus Notes addresses this issue to some degree, as it reduces dial-up costs for shops running IBM Lotus Notes by accelerating replication between Notes clients and Domino servers. We found that TurboGold improved replication performance by up to 75% in our tests, so it should help control remote access costs. Furthermore, management and installation of the product have been well thought out, thereby minimizing the hassle of installing the necessary client component on remote systems.

The product is novel in that it's Notes- and Domino-specific. Administrators need to consider how much bandwidth and time users dedicate to Notes traffic vs. other network traffic to determine how much money really can be saved. The principal downside of the product is its cost — pricing for the Notes client is $85 per user for the client and $2,300 per server, making it almost as expensive as Notes and Domino on a per-client basis.

Also, IBM is working on including new network and replication performance accelerating technology in its new version of Notes and Domino, Release 6, later this year. Companies that are not planning to move to Release 6 immediately certainly will see a return on investment (ROI). Those that plan on making a quick transition still will want to evaluate this product, as it might provide enough of a performance improvement over that available in Release 6 to justify the investment.

Performance gains help it pay for itself

We saw the time required to replicate 2M bytes of data in a mail file drop from 8 minutes and 26 seconds to 4 minutes and 47 seconds (see "How we did it," www.nwfusion.com, DocFinder: 1221). From a practical perspective this means TurboGold could pay for itself in a few business trips by each user, depending on how long users stay connected for replication purposes and if remote access telecommunication charges are more than a local phone call on a hotel phone bill.

TurboGold works by streaming and compressing network traffic and caching stored documents. TurboGold only compresses uncompressed data, so users who typically send and receive data largely in native document formats rather than as Notes documents, which typically are compressed already, will see substantial performance gains. The two main components that manage the streaming, compression and caching include the TurboGold client software and Stampede's Verifier software that runs on the Domino server. The product works best at slower connection speeds. We only saw a 20% performance improvement when replicating the same data over a LAN.

The use of compression has bearing on the per-server-pricing model because compression affects server performance and memory requirements. Stampede has a three-tier server-pricing model in which the basic TurboGold Verifier costs $2,300. For Windows NT- and 2000-based servers or IBM iSeries (AS/400) and pSeries (RS/6000) servers with five to eight CPUs and two to four partitions, Stampede offers advanced server software, priced at $6,400. An enterprise version for the IBM zSeries and unlimited CPUs and partitions costs $25,700. TurboGold documentation includes a recommendation to have 128K bytes of memory per replication session available on the server.

From a management perspective, TurboGold should have little effect on your network administration load. The software includes an administrator's console called TurboGold Manager, which provides reporting on performance of the multiple Notes servers that have the Verifier software running.

The client can be configured to run transparently to end users, so training can be avoided. More sophisticated users can do some personalized fine-tuning such as setting cache size and what acceleration techniques to use over the LAN. Users with full access to the client also can view information on performance acceleration. One nice added feature is an answer file generator to help speed deployment to large numbers of users. This feature lets administrators specify whether TurboGold will install silently or interactively or run transparently and lets certain parameters be predetermined.

On the server side, TurboGold can run on Versions 4.51 and higher of Notes and Domino and runs natively on Win 2000- and NT-based servers. On IBM iSeries (AS/400 servers running OS/400 Version V4R4MO) and IBM pSeries (RS/6000 servers running AIX Version 4.3.2) servers it supports Notes and Domino Version 4.65 and higher. Sites running Domino on Solaris, HP-UX and OS/2 also can run TurboGold in proxy mode, where another server acts as a proxy for Domino running on those platforms. Client support includes Windows 95, 98, ME, NT and 2000. A version of the software that accelerates replication for the Web-based Lotus iNotes costs $75 per user.

Companies that rely heavily on Notes to deliver messaging and corporate data to end users should see an ROI from TurboGold. However, to really make sure that there will be a cost savings, administrators need to look at the degree to which Notes traffic affects the high costs of dial-up remote access in the first place.

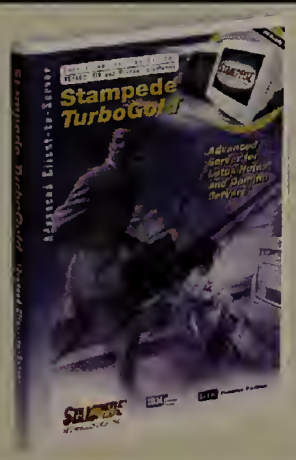
Caton is a freelance Web consultant in Boston and has reviewed technology products for more than 12 years. He can be reached at mcaton@onebox.com.

Net Results

TurboGold Performance Accelerator for Lotus Notes Version 4.21

4.25 RATING

Company: Stampede Technologies, (937) 291-5035, www.stampede.com **Cost:** $85 per user and $2,300 per server. **Pros:** Good performance improvement for dial-up users; easy to administer and manage; excellent deployment tools; provides broad platform support through proxy capability. **Cons:** Expensive; performance gains in network environment less apparent.



What's the score?

Stampede TurboGold Performance Accelerator for Lotus Notes	
Performance 40%	4.5
Management/Administration 40%	4.0
Ease of use 10%	4.0
Installation/Documentation 10%	4.5
TOTAL SCORE	4.25

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.

TESTER'S CHOICE
Tom Henderson

It's default of the wireless LAN vendors

There are two ways to access a wireless LAN: through public access points and through those access points that are not technically public. Stories abound about war-driving missions made by access point mappers, replete with specialized antennae, Global Positioning System logging apps and various sniffing/snorting tools.

Consultants employed by top-15 accounting firm Crowe Chizek recently did a war-driving mission in Indianapolis, and found dozens of business-placed, absolutely publicly accessible wireless LAN access points. Of course those access points weren't intended to be public access points — it's just that their installers used the default security settings to get them working.

Some argue that public access points — those sitting in coffee shops for example — ought to be open, and protection left to wireless LAN users via the user's personal firewalls and other security authentication applications. Barristas can't do tech support is the argument. The reality is that loads of NetBIOS-based Trojans prey on such connections. I find warnings about coffee and alcohol in such places, but not about Back Door Seven or SirCam.

I've reviewed dozens of wireless LAN access points and several wireless LAN gateway/router products, and I'm convinced there's a cure to this security problem. But first we have to admit there's a problem. Then, we have to change our default behavior when using wireless LANs, no matter where we use them.

Wireless Ethernet Compatibility Alliance (WECA), the organization that certifies interoperability among wireless LAN devices, has more than 320 products certified. But Wi-Fi covers interoperability, and little else.

The biggest problem in wireless networks is that to achieve a low customer support level (often called maximized positive out-of-the-box experience), most default settings for wireless LAN access points and client card software are at a level that mandates no security at all. As a result, civilians installing a wireless LAN in their homes or small offices are inadvertently providing a free Internet access point for users that drive, walk or crawl by.

My residence is located about 200 meters from the nearest busy street. It has 802.11a and Wi-Fi certified access points in it. The Wi-Fi intruder alert (foreign media access control [MAC] address association attempt) has been registered four times; the 802.11a segment has recorded one. I should also mention that I live in a low-density housing area in suburban Indianapolis. I can't imagine the potential drive-by logon attempts/access point association attempts where the populations of residences or businesses are higher. Most people don't know the difference between an alien MAC address on their network and a live hand grenade. Either could blow up assets they value.

My hope, therefore, is to have placed into Wi-Fi, Wi-Fi5, and subsequent WECA specs, the mandate that security settings be very clear, not set to a less-secure default and explained in understandable detail. If that doesn't happen, we'll all end up Snorting when it comes to wireless LANs. In lieu of that, at least bundle Black Ice, Norton Internet Security 2002 or another prophylactic in every wireless LAN card box.

Henderson is principal researcher for ExtremeLabs in Indianapolis. He can be reached at thenderson@ExtremeLabs.com.

Management

Strategies

- CAREER DEVELOPMENT
- PROJECT MANAGEMENT
- BUSINESS JUSTIFICATION

Mainframe skill shortage

IT staffers are coming to the job without any mainframe experience.

■ BY SUZANNE GASPAR

Last July, the Boscov's department store chain took a big step to cut ties to the green-screen interface and reduce a 90% dependence on mainframe skills.

The company replaced its IBM mainframe and OS/390 operating system with an IBM zSeries 900 mainframe that runs z/OS and Linux.

Three-quarters of Boscov's data is processed on the mainframe today, but Boscov's will be moving much of it over to Linux by 2007. The first application was moved over last month, says Harry Roberts, CIO.

The switch lets the Reading, Pa., chain continue to use traditional mainframe COBOL and CICS languages on the z/OS side of the box, together with technologies such as Java running on Linux. With Java-based applications, IT will benefit from real-time browser-based reports in place of static data outputs.

Eventually, nearly all mainframe programming will be done on Java. Roberts says phasing out COBOL programming will transform his department's skills base to 50% client/server, 25% mainframe and 25% a hybrid mix.

With 10% of its legacy IT pros heading for retirement through 2005, Boscov's is facing a wake-up call. "We have to identify and understand that there is a change in the technology curve, that COBOL staff aren't being trained any longer," Roberts says. "Today's graduates understand Java, Linux, C++, HTML and XML, and these are the languages of the future."

Indeed, there's no new mainframe blood on the way. Donald Carr, professor of Computer Information Systems for Eastern Kentucky University, estimates that 90,000 COBOL programmers maintain legacy systems today. Meta Group reports that more than half of today's mainframe pros are at least 50 years old and nearing retirement (see graphic).

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>
> — Harry Roberts, CIO, Boscov's

However, 60% of hosted applications will continue to reside on mainframes through the next decade and require support from legacy staff. Meta recommends that companies cross-train IT staff in a blend of mainframe and open systems skills.

Migrating off the mainframe to a distributed architecture can provide an opportunity for younger workers to be exposed to mainframe skills. Legacy staff can develop a career path by learning new skills and automation tools for adapting mainframe applications to other systems.

Formal training is in place for Boscov's IT professionals to learn the shared aspects between the mainframe, Linux and client/server architectures, and in the next 24 months developers will focus on the finer points of Linux and Java. COBOL programmers already are using IBM VisualAge Generator to minimize staff's need to understand Java to do their job. "We have to take steps to ensure that our workforce can cope with the new architecture, and take advantage of it," Roberts says.

Like Boscov's, Volkswagen of America is planning to move to an IBM zSeries mainframe running Linux when the firm's R24 lease expires in October. Scott Aschenbach, computing services manager for gedas, Volkswagen's IT business unit in Auburn Hills, Mich., expects that 10% of the company's 50 legacy IT pros could retire in the next decade.

Aschenbach says it's difficult to find staffers who know mainframes. COBOL programmers are especially rare, despite availability from layoffs, he says.

Fewer schools teach about COBOL and the OS/390 or how to use a 3270 terminal, but instead teach editing on a Windows or a Unix box, Aschenbach says. "They don't have the skills to create a file on my systems, and lack experience with a whole host of specialty tools that are used in the mainframe environment such as CA-7 scheduling application and CA-Easytrieve."

It will take Volkswagen several years to perform the full migration while adding functionality to applications. During that time Aschenbach will need lots of support staff. So, he's involving them in the transition and motivating them to upgrade their skills and stay on after the mainframe expires.

People need to accept that there's going to be a shortage of mainframe skills and a need to migrate off the mainframe, he says. "It's one of those things where everyone knows that there is a problem but no one talks about it. They know that it's going to go at some point and it's just a matter of when and where." ■

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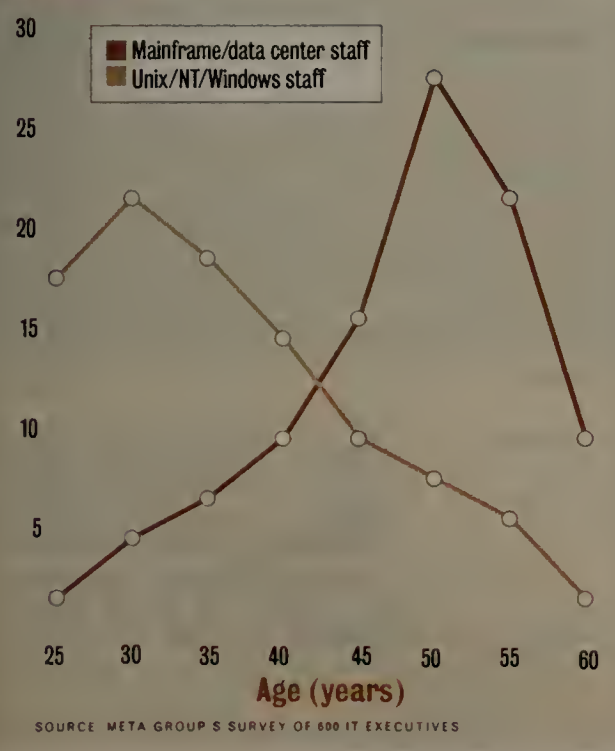

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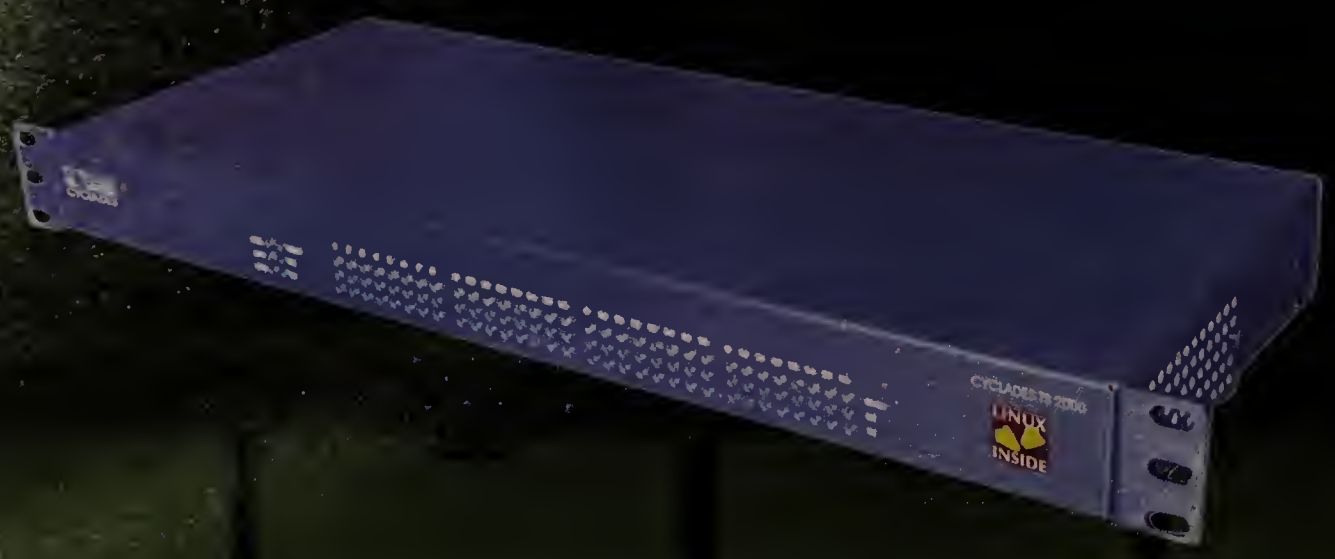

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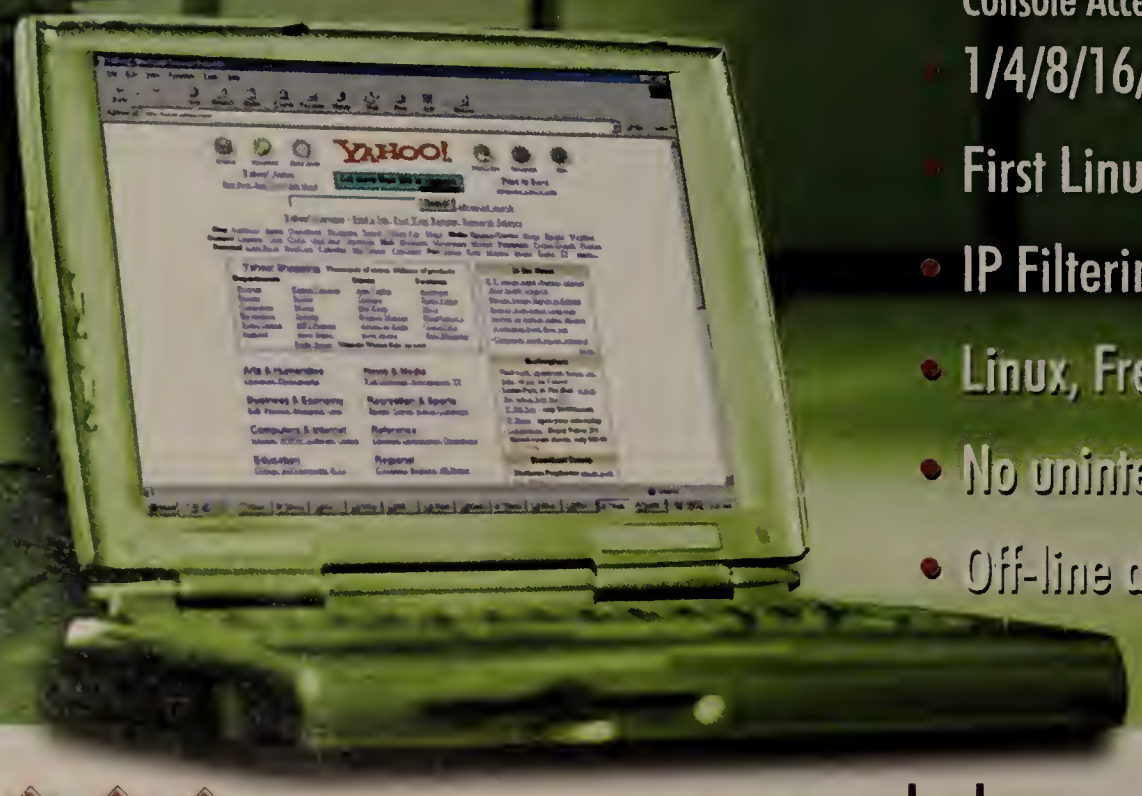

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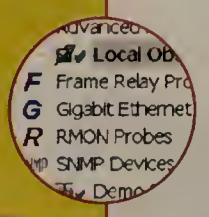

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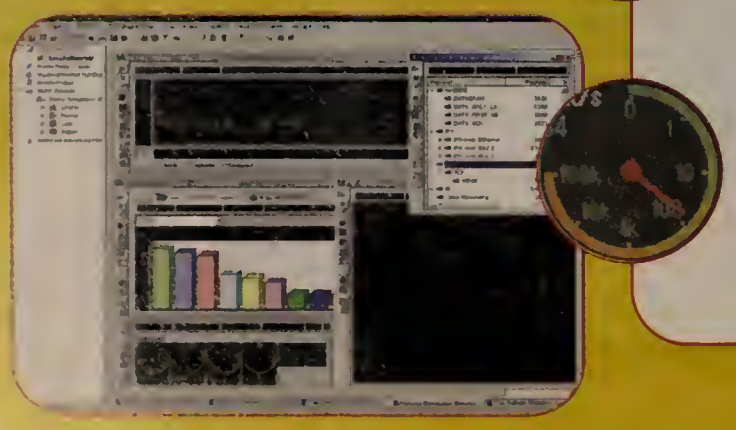

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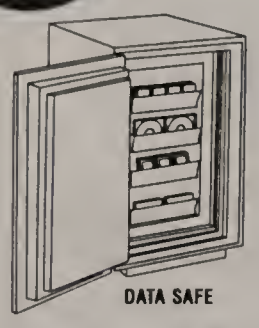

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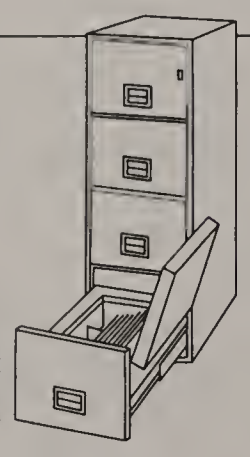

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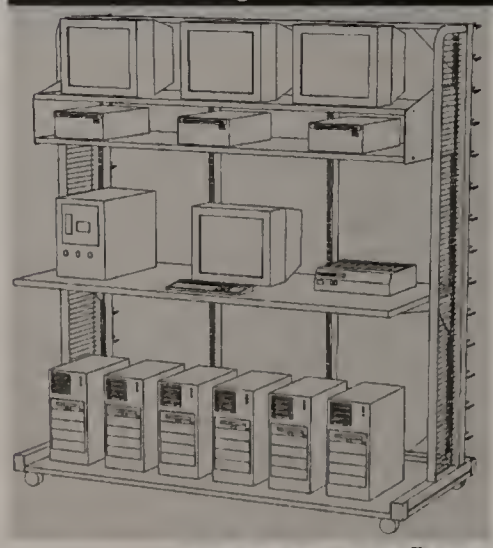

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Programmer Analyst (2 positions) to analyze, develop and maintain web and client server appls using Java, XML, HTML, VB, Active X, Oracle, etc under Windows OS; perform database monitoring and quality control, coding and testing of projects; generate batch reports from existing data and debug for better performance. Require: BS or foreign equiv in CS or Engg (any branch) with 6 months exp in IT. Travel to client site in US. Competitive salary. F/T position. Send Resume to: Smartsoft International, Inc., 4898 South Old Peachtree Road, Suite 200, Norcross, GA 30071.

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Information Systems Engineer wanted in Conroe, TX to set up, implement and manage information systems and network for order entry, inventory control, production and cost accounting systems, ensuring compliance with international petroleum industry standards. Req. B.Sci. in Comp. Sci or Eng. plus 2 yrs exp. in the job, Mail resumes to Mr. Tony Deeb, President, Packard International, Inc. 22397 White Oak Drive, Conroe, TX 77306. No phone or fax.

Software Engineer II - ABAP/ SAP Conduct needs anal. & determine SAP-based IS req. in Materials Management, Sales, Accounting & Financial areas, using appropriate SAP R/3 modules. Design, develop, install, maintain & upgrade syst., software & servers. Develop SAP R/3 applications, & integrate w/ web & other syst. using ALE/ EDI, Idocs, BAPI, RFC, SAP Connectors, Middleware. B.S. or equiv. in Computer Sci. or related Engineering field, + 2 yrs exper. Send resume to VP, HR, En Pointe Technologies, 100 N. Sepulveda Blvd., 19th Fl., El Segundo, CA 90245

Rapattoni Corporation is looking for a Sr. Magic Applications Programmer/ System Analyst. Applicant should have BS or equivalent w/skills of Magic Programming & Btrieve. Job site/ interview: Simi Valley, CA Please email your resume to: Bret@rapattoni.com

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TX software and development Co. seeks Software Eng. to assist with the analysis, design, code, test and implementation for the applications; system development life cycle methodologies and relational database design. Min. requirements: Bachelor's Degree in Computer Information Systems or equiv. based on a credentials evaluation, and 3 months exp. in-job or job-related including experience with Oracle 8i/9i, PDM with eMatrix (MOL, Java ADK), Tcl/Tk, Oracle Designer 6/6i, Erwin, Oracle 9i IAS, Oracle forms (web), Oracle Reports(web)Pro*C, Sql Loader, PL/SOL (cartridges), J2EE, Unix Shell Scripting, Data Migration, developing test scripts, JAD facilitator, data warehouse with Cognos. Resumes to Inforide Technologies LLC, 8705 Shoal Creek Blvd, Suite #108, Austin, TX 78757. No calls.

Dir of Development to provide technical leadership to analyze, design & implement appls using Delphi, Java, VB, ERWin on Windows OS; manage databases using Oracle, Dev 2000, Ms Access, SOL, etc; interacts with business users to gather requirements; review project requests and prioritize; assign, direct, manage development team; plan/execute OC policies. Req: MS in CS / Engg. (any branch) with 3 yrs exp in job offered. A BS or foreign equiv in CS or Engg (any branch) with 5 yrs of relevant progressive exp will also be accepted. Highly competitive salary. F/T position. Resume to HR, Get Proof, Inc., 3050, Royal Blvd South., Ste 195, Alpharetta, GA 30022

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DotCom.Team is looking for Software Engineers. The candidate must have extensive experience in internet technologies like Web Methods, Vignette Storyserver, Java, VC++, JSP, XML, ASP etc. The job will require travel to client sites throughout the US. Min. req. include a BS in Engg. or a subspecialty field in engg., or math, computer science, or physics, and five years of progressive work experience as a Software Engineer., or a Master's degree in one of the above fields and 2 years of progressive experience as a Software Engineer.
DotCom.Team, LLC
Attn: Bharat Agrawal
22 River St., Suite A-4
Braintree, MA - 02184
Email - bharat@dotcom-team.com

Market Research Analyst II, E-Commerce/B2B: Conduct mkt research for computer products & services to determine potential & maintain & improve sales & mkt penetration. Establish, design & administer formats for mkt research & analysis, prepare reports & analyses, & use to help determine mkting strategy & focus. Train & supervise staff & junior analysts. Follow up to determine effectiveness of methods & efforts of competitors. BA or equiv + 1 year. Respond to VP, HR, En Pointe Technologies, 100 N Sepulveda Blvd, 19th Fl, El Segundo, CA 90245.

Director, Bus. Planning, E-Commerce/B2B. Formulate policy & strategy to identify alliance partners & institutional customers for services, & forge alliances. Develop & oversee gathering & analysis of demographic, market, products, etc. data; interface w/ mgmt, sales & mkting groups to focus & implement strategy. MBA & min. 2 yrs. experience in same or related area. Send resume to VP, HR, En Pointe Technologies, 100 N. Sepulveda Blvd., 19th Fl., El Segundo, CA 90245.

Special Projects Director for company located in Grand Prairie, Texas. 40-hour week, 8a-5p, Masters or foreign degree equivalent in Computer Science and 1 year experience as a Systems Analyst. Supervise 1 employee. Responsible for IT project management including planning, designing and implementing technology solutions in order to reduce production costs and increase efficiency. Fax resume to Human Resources 972-642-9987.

Software Engineers (2 positions) to analyze, design develop web based client/server appls using VC++, HTML, Java, Beans, JSP, EJB, XML, VB, Servlets, PL /SOL, Oracle, MS Access under Windows, UNIX, & Weblogic appl server platforms: design/ develop prototype models (Use-Case) using Rational Rose; trouble shoot S/W and H/W problems and recommend upgrades; interact and mentor other project team members & end users. Require: MS in CS or Engg. (any branch) with 3 yrs exp in IT. BS or foreign equiv in CS or Engg (any branch) with 5 yrs of relevant progressive exp will be accepted. Competitive salary. Req. travel to client sites. F/T. Resume to: Unilinx, Inc., 4625, Alexander Dr, Ste 110, Alpharetta, GA 30022

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SavaJe Technologies Inc. has an opening in its Lisle, IL office for a Software Developer II who has a Bach. in Computer Sci. or Eng. & 5 yrs C/C++ prog. exper., incl. 2 yrs of exper. w/ Java & exper. w/ Visual Studio, JavaSpace, implementation of Java API class libraries & utilizing object-oriented modeling technique methodologies. Interested candidates should send resume to Ref. SDII, Julie A. Geren, Human Resources Manager, 11 School Street, North Chelmsford, MA 01863.

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Seeking qualified applicants for the following positions in Memphis, TN. Sr. Business Application Analyst: Coordinate /serve as liaison between technical developers and users/ customers. Requirements: bachelor's degree* in computer science, math, statistics, business or related field plus 5 years of experience in analyzing business systems and developing technical automated solutions. Experience with PeopleSoft applications, SOR and Informix also required. Senior Programmer Analysts (2): Formulate/define functional requirements and documentation based on accepted user criteria. Requirements: bachelor's degree* in computer science, MIS, engineering or related field plus 5 years of experience in systems /applications development. Experience with Oracle and UNIX scripting also required. *A master's degree in the stated field can offset 2 years of required experience for any of the positions. Please indicate which position you are applying for on your resume. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Senior Software engineer-Design & implement Network Management System software on Cisco platform using Cisco Element Manager Framework, C++, Unix & Object Oriented design & development methodologies. Design management systems software by analyzing Management Information Base & develop Network Management System software using Simple Network Management Protocol. Must have Master's degree in Computer Science, Electrical Engineering or related field & one year of experience as Software Designer Communication Network Management. To apply: Send resume to attn: Angie Lebitz, Cyberwerx, Inc. 13000 Weston Parkway, Ste. 109, Cary, NC 27513.

SOFTWARE ENGINEER-Quantitative-based financial management firm seeks Software Engineer for its Production department. Duties include: develop & maintain computer links between futures trading system & trading desk; write new programs for real-time data area & real-time systems, including programs to handle real-time aspects of data feeds & serving data in real-time to (program) clients; create/verify mathematical trading models for real-time trading systems. Successful applicants must possess Master's in Computer Science, Mathematics or Physics & at least one year experience in job duties or one year experience as Software Engineer engaged in theoretical analysis. Salary according to exp. Mail resume to RTC, 600 Route 25A, East Setauket, NY 11733, Attn: GHEV

F/T Software Applications Engineer. Responsible for modifying and/or enhancing new as well as existing applications. Analyze business requirements & design & develop documentation to support business requirements & specify software design changes as well as implement & test designs. Work w/ multi-threading, MS Visual C++, COM, C, C++, UML, Rational Rose, VB, Star Team & Visual Source Safe. Must have Bachelor's degree in CS, Electronic & Communications Engin.or related field. Foreign degree equivalent accepted. Must have 5 yrs. exp. in job offered or position w/ same duties. Send resume: dgorga@ups.com or UPS, Job Code ISSCW, P.O. Box 833, Mahwah, NJ 07430, Attn: Deborah Gorga. Human Resources, B-098.

DIVERSITY IN IT CAREERS

Advertising Supplement

African Americans in IT

By Jennifer Hicks

IMDIVERSITY.com

The U.S. population is a smorgasbord of diversity. One would think then, if recollections of probability theories from statistics classes are correct, that our various populations would be represented in similar proportions within the IT industry. However, such is not the case.

African Americans comprised 12.3 percent of the population according to Census 2000, yet a recent Information Technology Association of America (ITAA) study reveals that they make up only 6% of the IT workforce. (The numbers are even worse for Latinos and First Nations members.)

Renee McClure, national president of the Black Data Processing Associates (BDPA), sees things a bit better though, albeit with an accompanying negative: "There is a significant number of African Americans in IT, [but] not that many have arrived at positions of power and decision-making."

So the problem is two-fold. First, African Americans, as is true with other minorities, are not proportionately represented in the IT industry. Second, those who are in the industry are not often in executive positions.

A 2001 survey by ITAA, IT Magazine, and U.S. Black Engineer found that people entered the IT field for two primary reasons: training opportunities and professional development. But a 2001 QEV Analytics report commissioned by ITAA cites early exposure to technology as essential in helping minority members make the decision to enter IT. Yet, oftentimes, it is the early exposure to IT that some minority groups have missed.

BDPA, along with many community organizations such as Jesse Jackson's PUSH Coalition and some corporate foundations, are taking steps to remedy the situation. Specifically, BDPA serves as an intermediary between the information technology and African American communities. More than 40 chapters across the U.S. offers workshops, career counseling, technological assistance, networking opportunities, and computer competitions to those interested in technology and those seeking to advance their careers.

For seasoned IT professionals, promotions can be difficult unless your employer provides training opportunities. Technology changes rapidly and unless one has up-to-date skills and training, moving up the corporate ladder can be impossible. Those organizations that are tops in their field (see sidebar) provide access to training and thus "grow their own" IT pros are also more likely to make career advancement possible within their organizations.

Based on sales, profits, assets, and market value, the following companies, arranged in descending order, are the IT leaders, according to Fortune Magazine.

IBM	Oracle
Hewlett Packard	Gateway
Compaq	Computer Sciences Corporation
Intel	EMC
Dell	Apple Computers
Microsoft	Micron Technology
Tech Data	America Online
Electronic Data Systems	Unisys
Cisco	Seagate Technologies
Xerox	Automatic Data Processing
Sun Microsystems	Computer Associates Internat
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Author bio:

Jennifer Hicks, author of several hundred articles and who lives in the Boston area, is the director of online content for IMDiversity.com http://www.imdiversity.com, the Web site where opportunities, careers, and diversity connect.

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FBI Special Agent Frank Andrews

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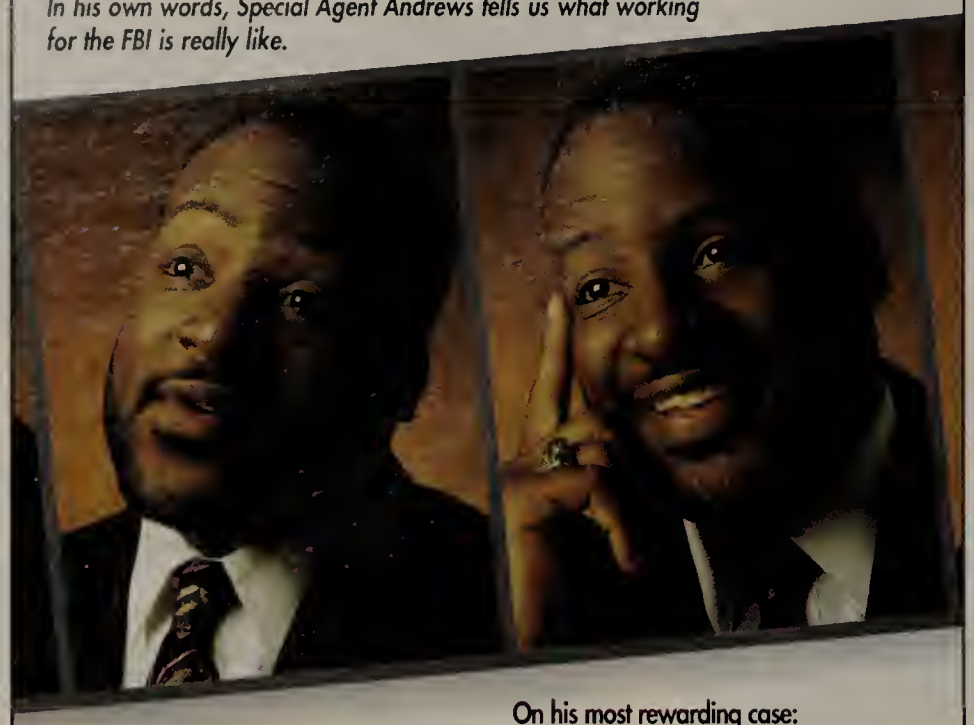

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BackSpin Mark Gibbs

Longing for the good ol' days

I sometimes long for the good ol' days of the mainframe. There was something about that big iron — the smell of the computer room, the hum of air conditioners, the feeling of computing being a special endeavor and somehow magnificent.

Since those days, the only place I have had that same feeling has been in hosting facilities where the sheer scale and the charge in the air gets me all amped up.

But the thing that was really great about those machines was their operating systems, in particular the way applications were partitioned and ran as if each owned the whole machine. And when a program crashed, the rest of the machine was unaffected.

Ah, yes, those were the days when management was pretty much in the dark about what went on in the computer room. Thus was the Empire of the Mainframe forged.

Be that as it may ... it seems as if the idea of applications running in protected operating environments is undergoing something of a renaissance. This is not surprising, as the more we build applications on PCs that are huge, frighteningly complex and full of bugs, the more we discover that we need a framework for ensuring integrity and authenticity of data and software.

The previous attempt to define such a system came from the Trusted Computing Platform Alliance (www.tpca.org), a group of about 180 companies established by IBM with Compaq, Hewlett-Packard, Intel and Microsoft. Its goal (see "Trusted Computing Platform Alliance," www.nwfusion.com, DocFinder: 1226) was to develop an industry specification "[providing] a ubiquitous and standardized means to address trustworthiness of computing platforms [and] improving the authenticity, integrity, and privacy of Internet-based communications and commerce."

Version 1.0 of the TPCA specification was released in January 2001 and Version 1.1b was released this February. In April, the first TPCA products appeared: the IBM Thinkpad T30 notebook series, of which some models will use an Atmel processor compliant with the TPCA Version 1.1 specifications. What these systems will mean in real IT environments isn't clear, but with IBM calling the feature the "TCPA-compliant IBM Embedded Security Subsystem 2.0," it doesn't exactly sound like a rallying call for a standard.

Now you may have noticed that I used the phrase "previous attempt" above. This is because Microsoft has, in its usual "all-your-base-are-belong-to-us" style, recently started talking about its future trusted computing platform called Palladium, which is expected to ship in 2004 with the next version of Windows, code-named Longhorn.

In a recent *Network World* story (www.nwfusion.com, DocFinder: 1227), Martin Reynolds, a Gartner analyst, said, "Hardware will have to be modified and it will have to be done right, it will have to be perfect." And therein lies a potentially enormous gotcha in the idea — that "perfect" (or even "near perfect") software and hardware can be built. The other potentially enormous gotcha is far more dramatic: Under the Palladium architecture, who controls the trusted environment?

Ladies and gentlemen of the jury, let me offer you Exhibit A — Microsoft Passport. Intended to be a single sign-on system that would manage and selectively express your identity online to Web sites and services, Passport has been found to have security holes big enough to drive a bus through, and its "benefits" are largely based on making it easier to buy stuff. Not exactly the profile of a strategic IT solution.

My guess is that unless Microsoft manages to pull some kind of systems engineering rabbit out of its virtual hat, Palladium will be buggy and hard to administer, and do more to secure the Microsoft stranglehold over OEMs and users than solve the problems of secure, reliable computing.

Boy, those old mainframe days sure were good.

Reminiscences to backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

The end of software as we know it?

Cutter Consortium Chairman Ed Yourdon has a new book — *Byte Wars* — that includes this dramatic proposition: The government could mandate the use of open source software in the wake of a cyberattack that brought down "the nation's telecommunications network, banking network, air-traffic control system or power grid . . . for even a day or two."

As I understand the theory, such a disaster would so clearly expose the vulnerabilities and limitations of proprietary software (and its makers) that the government might see no recourse but to prohibit its use in favor of relatively more secure open source alternatives. Yourdon goes so far as to suggest that IT executives should prepare contingency plans.

"If someone had told me a year ago that the Taliban would hasten the move to open source computing," Yourdon says, "I would have dismissed it as a crazy idea."

It's still pretty crazy.

Our terrorist adversaries — whatever might be left of them — have yet to demonstrate they can rub two sticks together, never mind bring down a network.

But grant them that capability. What would lead anyone to believe that Congress or the president would respond to a cyberattack by dismantling a multibillion-dollar software industry? It certainly wouldn't happen without political blessing.

You say drastic times require drastic measures?

I say Gates, Ellison and Palmisano aren't losing any sleep over this.

A welcome solicitation call

One problem with those prepaid cellular phone services: You just never know when you're going to find yourself stranded on a mountain in Colombia.

A non sequitur, you say?

Bear with us as we recount the harrowing tale of 26-year-old Leonardo Diaz. According to BellSouth, Diaz "took off for a mountain climb to the Nevado del Ruiz equipped with chocolates, a bottle of brandy and a BellSouth prepaid cellular phone, never knowing that the phone would become his lifeline."

Diaz got lost and wandered the mountain for two days. At the end of the second day, his phone rang. It was a BellSouth representative who wanted to know if Diaz would be interested in purchasing another batch of minutes.

We presume the conversation went something like this:

BellSouth rep: "Would you care to buy more minutes, Mr. Diaz?"

Diaz: "Perhaps, but first would you do me the favor of calling someone who can get me the heck off this mountain?"

Let's stop now to ask the obvious question: Why didn't Diaz simply use his phone to call for help? (Buzz had to ask BellSouth, because it wasn't addressed in the press release touting the company's role in this rescue.)

Most of you have probably guessed the answer: Diaz was plumb out of minutes.

"Our systems detected that and that's why one of our service reps called him to remind him to . . . replenish his account," a BellSouth spokeswoman told me in an e-mail. "It was coincidence that she called him with the reminder and found him, instead, stranded on the mountain."

Shouldn't there be special dispensation for such situations? A mechanism that would let a customer without minutes make an emergency call?

Turns out there is such a safety net: In Colombia, BellSouth customers can dial 112 to get help even if they have zeroed out their minutes.

Why didn't Diaz do that? BellSouth says his fingers were too cold to dial.

Seems implausible, since he could take calls and had ample motivation. Either way, my guess is the guy will soon be signing up for a regular monthly cell plan.

Comments to buzz@nww.com. No advance payment required.

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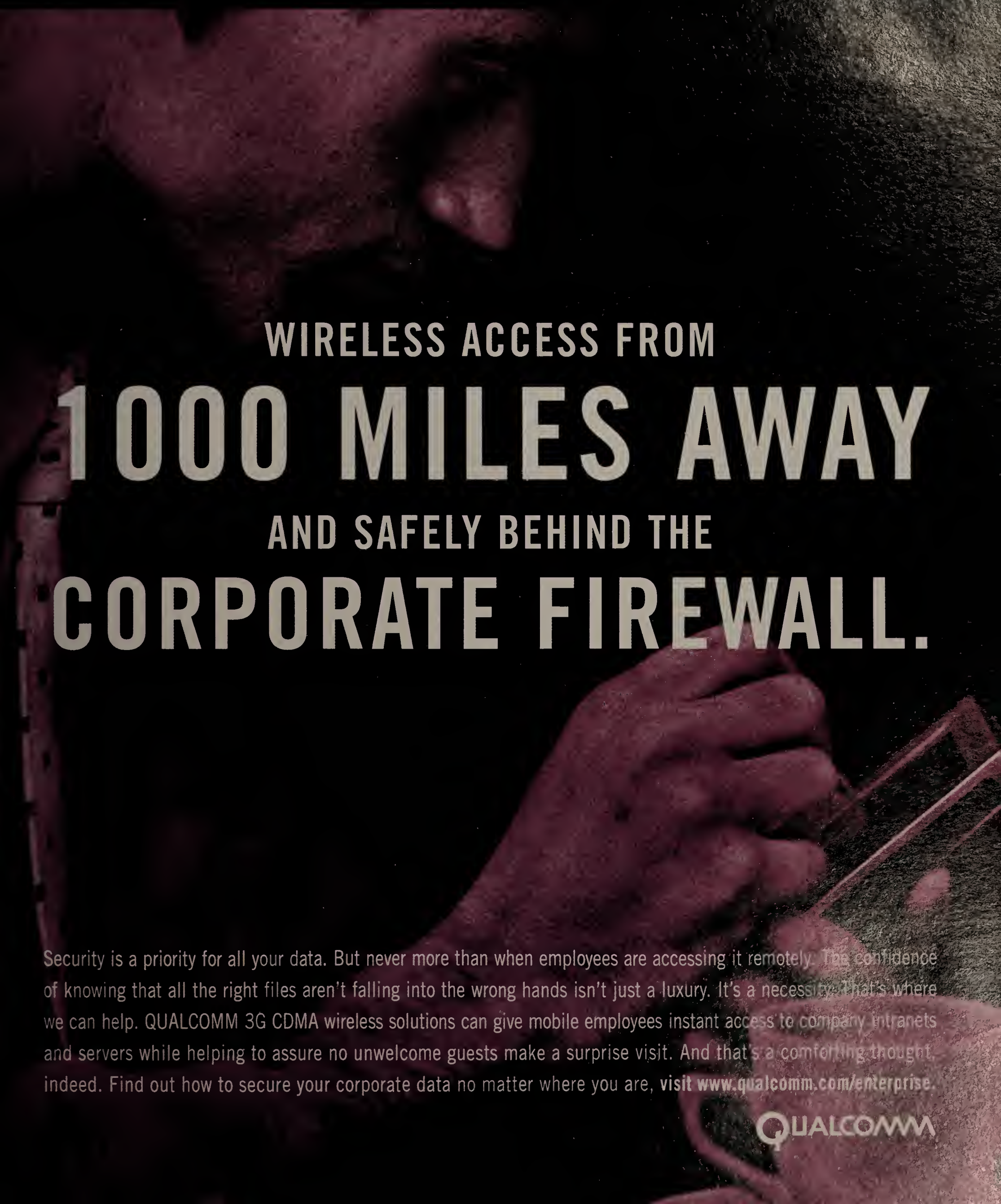

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